Interpretive Notes for the Academic Performance Index

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This report has modest aspirations. In one respect it serves as a supplement to current CDE API materials, such as the Press Briefing Packet, which describe the basics and logistics of the API. Also, this report can be seen as a prequel to forthcoming reports on statistical properties of the API and the Award Programs.

This report examines three topics:
1. Interpretation of API scores (to better explain the metric).
   E.g., What is an API score of 600 (or 800) telling us?
2. Interpretation of Year-to-Year Improvement in API scores
   E.g., Is a 10 point improvement a big number, a 100 point improvement?
3. Relation between API scores and demographic characteristics (for schools and individuals). E.g., Do schools that are similar on measured demographic characteristics obtain similar API scores?

To illustrate some of the content and perhaps motivate the reader, here are some very basic sample questions for these three topics.

1a. What API score corresponds to half the students in the school scoring at or above the national 50th percentile on each Stanford 9 test?
    For Elementary and Middle Schools just about 660, for High Schools closer to 650.
1b. What proportion of students exceeding the national 50th percentile on each Stanford 9 test would correspond to an API score of 800?
    A little less than three-quarters of the students (.73 for Elementary and Middle Schools, closer to .74 for High Schools).

2a. If each of the students in a school improved each of their scores 2 percentile points on each test, how much would that school's API score increase?
    The API would increase about 16 points. Roughly, each 1 point increase in the individual percentile rank score translates into an increase of 8 points on the school-wide API.
2b. If each student in an elementary school answered just one more question correctly on each of the four Stanford 9 tests, is that school likely to meet its growth target for the award programs?
    This is harder to quantify, as the translation of number correct into percentile rank scores is uneven over the Stanford 9 tests. A rough (and conservative) answer is: more likely than not. Tables in First Pass and Lots More give more details.

3. Each school has a list of 100 Similar Schools, determined by measured demographic characteristics. Do the API scores for these similar schools lie in a narrow range?
    Seventy-five percent of elementary schools have a range of their Similar Schools API scores of at least 243 points (which corresponds to a width of at least 5 statewide deciles). Seventy-five percent of High Schools have a range of their Similar Schools API scores of at least 209 points (which corresponds to a width of almost 7 deciles).

The structure of the report is layered in an attempt to serve different levels of reader interest and patience. The "First Pass" section presents one or two tables under each topic to introduce the featured messages of the analysis, using the 1999 Elementary School data. The "Lots More" section adds High and Middle School results and constitutes more of a full treatment for each topic, with some considerable redundancy and detail. The "Archive" section contains files and calculations used in the report. For many readers, the First Pass section will be more than enough content; some readers may want to dip into the Lots More section for a specific topic.

This report is likely to be updated with the addition of year 2000 data and perhaps also expanded in response to comments on the present version. To repeat: this report is not a self-contained primer on the API; CDE provides an array of useful documents on the PSAA web-site that describe the calculation and reporting for the Academic Performance Index.

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First Pass: Interpretation of API scores

In the reporting of Stanford 9 scores in the STAR program, school performance is presented in terms of the percent-at-or-above-cut-off scores for each grade level and content area. In particular, the STAR internet reports use the label "% Scoring At or Above 50th NPR", defined as "The percent scoring at or above the 50th percentile is the percent of students in this school, district, county, or state whose scores would place them in the top half of the students tested nationally." [from CDE website].

For our purposes we are going to use proportion at or above cut-off measures on a 0-to-1 scale rather than percentage on a 0-to-100 scale. Use the abbreviation PAC for these scores, so that PAC50 denotes the proportion of students at or above the 50th percentile in the national norms for the Stanford 9.

To proceed with the enterprise of interpreting API scores in terms of PAC measures, define for an elementary school

PAC50 = .4*PAC50Math + .3*PAC50Read + .15*PAC50Lang + .15*PAC50Spell.

The PAC50 measure mimics the content weighting (for Math, Reading, Language, Spelling) used in constructing the API for grade 2-8 students. For each content area, the specific PAC is computed for all API-included students (over grades). That is, for a K-6 elementary school, accumulate all the Math scores from eligible students in grades 2-6 (i.e. those students included in the API) and compute the proportion of those students whose scores meet or exceed the national 50th percentile for their grade-level testing. That proportion is PAC50Math. And similarly compute the PAC50 measures for Reading, Language, Spelling. (Corresponding calculations for Middle and High Schools are in the "Lots More" section).

Schools with PAC50 = .50.

One benchmark that has often been used in the yearly releases of STAR results is whether the statewide PAC50 for each grade level and content area is .50 or better. So one question of interest is, What API score corresponds to PAC50 = .50? There are many ways to approach this question (and some others are discussed in the "Lots More" section), but here's my shot at the simplest presentation: for the elementary schools in the API reporting, look at the API scores for those schools which have PAC50 scores very near .50. The table below provides a (rough) match of PAC50 = .5 to API around 660.

API scores from 77 Elementary Schools with PAC50 values from .495 to 0.505

Variable	N	Mean	Median	Minimum	Maximum	Q1	Q3
API	77	659.31	659.75	631.75	677.75	654.44	664.50

Reducing the PAC50 slice to the range .498 , .502 yields API scores for 32 elementary schools with slightly smaller range and with median API score moved from 660 to 657 (mean score moved from 659 to 658).

API scores from 32 Elementary Schools with PAC50 values from .498 to 0.502
Descriptive Statistics

Variable	N	Mean	Median	Minimum	Maximum	Q1	Q3
API	32	657.58	657.25	637.00	669.38	653.25	663.97

For interpretation of the API along the scale, it's useful to examine the PAC50 values that correspond to an API value. The Table below for elementary schools takes a narrow slice on API scores (e.g. 799 through 801) and displays the corresponding PAC50 scores (median, quartiles, and min,max). For example, consider the slice near API score 800. The table shows a summary of PAC50 scores for the 30 elementary schools in that slice and indicates that API=800 roughly corresponds to a PAC50 of .725. A reasonable interpretation is to say that API of 800 describes a school with 73% of its included students scoring at or above the national 50th percentile on each of the four tests (Math, Reading, Language, Spelling). (Of course raising Math to 76% would offset a drop in Reading to 69% and so forth, but for convenience we'll talk in terms of equal proportions across the tests). So even with an API of 800, a school may be seen as having considerable room to improve if one thinks in terms of the 27% of students below the national 50th percentile. Moving down the scale, an API of 600 roughly corresponds to a school having slightly more than 40% of its included students at or above the national 50th percentile on each Stanford 9 test.

Describing PAC50 data for a slice on API for Elementary Schools

		PAC50				
API slice	N	Median	Q1	Q3	Minimum	Maximum
399:401	17	0.148	0.142	0.153	0.135	0.168
449:451	36	0.204	0.199	0.208	0.180	0.227
499:501	33	0.269	0.258	0.274	0.234	0.299
549:551	34	0.345	0.332	0.351	0.322	0.360
599:601	36	0.415	0.405	0.421	0.367	0.437
649:651	32	0.485	0.480	0.494	0.447	0.509
699:701	32	0.562	0.553	0.568	0.543	0.590
749:751	32	0.644	0.638	0.654	0.615	0.690
799:801	30	0.725	0.720	0.732	0.709	0.752
849:851	16	0.808	0.804	0.815	0.800	0.820
895:905	16	0.885	0.878	0.894	0.876	0.897

The Lots More section contains additional analyses of PAC50 and API, such as the obvious regression fits corresponding to these tables, plus the calculations for Middle and High Schools. Just as a sidenote, the correlation between the API score and this PAC50 measure is .997 for the collection of 4849 elementary schools. Also presented in Lots More are results for PAC25.

end of First Pass: Interpretation of API scores

First Pass: Improvement in API
Consequences of Student Level Improvement for API scores and Growth Targets

In terms of student improvement:
1. What level of student improvement translates into a 10 point gain in API score? A 100 point gain in API score?
2. What does it take for a school to meet its API target for the next year? To qualify for the various Award Programs?

First step is to formulate student level improvement. In First Pass use the simple improvement process by which every student increases k percentile points on each test (four tests for elementary grades 2-8). Label this process as "I" for Integer. For example, k=2 adds 2 percentile points to each score (denote as "I2"). In the spirit of the questions above: If each of the students improved 10 percentile points on each test, how much would the schools' API increase? If each of the students improved 2 percentile points on each test, would that be enough improvement to meet that schools API target?

A. Improvement in API Scores

Consider, for the full set of 4849 Elementary Schools, the effect on the collection of school API scores resulting from each student score increasing k percentile points on each test (i.e., the four tests for elementary grades 2-8). Each row is labeled by the amount of individual improvement that is applied; the table shows the effects of individual improvement from 1 percentile point on each test up to 25 percentile points on each test. Each row contains summary statistics for the resulting 4849 school scores: median, mean and quartiles. For example, the row for which individual improvement is labeled by I3 shows that an increase by each student on each test of 3 percentile points would result in half of the Elementary schools showing an API increase of at least 25 points and three-quarters of the elementary schools showing an API increase of at least 22 points. Also, the row for which individual improvement is labeled by I5 shows that an increase by each student on each test of 5 percentile points would result in half of the Elementary schools showing an API increase of at least 43 points and three-quarters of the elementary schools showing an API increase of at least 37 points. Roughly, each percentile point of individual improvement (on all 4 tests) translates into an increase of 8 points on the school-wide API.

Increase in API Scores: All 4849 Elementary Schools

Individual Improvement	Median Change in API	Mean Change in API	Quartiles of Change Q1	Q3
I1	7.125	7.14007	5.75	8.5
I2	16.875	16.5623	14.625	18.75
I3	24.75	24.1975	21.625	27.375
I4	31.75	30.9332	27.75	34.875
I5	42.75	41.2936	37.25	46.625
I6	50.75	48.8499	44.125	55.25
I7	58.375	55.9094	50.25	63.5
I8	67.25	64.261	56.75	73.875
I9	77	73.394	64.375	84.75
I10	83.5	79.6672	69.25	92.625
I11	94	89.8095	77.375	105
I12	103.375	98.9091	83.75	117.25
I13	111.875	107.425	89.875	128.5
I14	121.125	116.731	96.375	140.625
I15	130.125	125.865	102.625	152.75
I16	140.125	135.888	109.125	166.25
I17	148.875	145.694	115.875	179.125
I18	157.625	154.415	122	189.875
I19	163.75	160.751	126.25	198
I20	169	165.705	130.875	204
I21	174.25	170.376	134.5	209.75
I22	180.375	176.106	139.875	216.5
I23	186.25	181.194	144.25	222.625
I24	190.75	185.262	147.75	227.5
I25	197.125	191.448	152.625	235

Preliminary year 2000 school-level API scores provide an opportunity to compare these improvement calculations with the actual improvement. For Elementary Schools, data on 4801 schools (48 scores missing) show:

Variable	N	Median	Mean	Q1	Q3	Minimum	Maximum
API change	4801	36.000	38.805	19.000	56.000	-89.000	189.000

The center of the API change distribution (median 36, mean 38.8) places it between the I4 and I5 rows in the table above. But there is one obvious difference the real-life improvement data: the actual changes in school scores, as one would expect, are far more heterogeneous than is represented by the simple (homogeneous) improvement mechanism in the calculations. For example, the quartiles for API change are much more spread apart than those for the I4 or I5 rows in the improvement table. The average of all the school API changes may correspond to an increase by each student of 4 or 5 percentile points, but the data indicate some schools have far greater student improvement, and some schools far less (including substantial declines, such as the school with the greatest decline which roughly corresponds to student declines of 10 percentile points on each test).

But the purpose of the improvement calculations is not to model the full Year 2000 data (as that would require much additional complexity), but instead to provide some simple interpretations or calibrations for change in the API scale. That is, one way an improvement of 100 points could come about is for each student to improve 12 percentile points on each test. Or an improvement of 56 points could come about by each student improving 7 percentile points on each test.

B. Improvement to Reach API Targets

The second set of results show the improvement required to meet or exceed the API growth target; for most schools (e.g., for API < 780) the API target is a rounded version of API + (40 - API/20). Use the term "DT1I" to indicate the smallest value of k for which the school-wide API target is met (using the "I" form of individual improvement).

Furthermore, for AB1114 Awards the doubled growth target (for most schools a rounded version of API + 2*(40 - API/20)) is relevant. Use "DT2I" to indicate the smallest value of k for which the doubled growth target is met (for the "I" form of individual improvement).

It may be most useful/realistic to present these improvement results for relevant subsets of elementary schools. Specifically, for DT1I, use the 4048 elementary schools with API <= 780 (i.e. schools with a growth target of 1 or more). (This restriction sets aside elementary schools in decile 10 and in the top two-thirds of decile 9.) And for DT2I use the 2413 elementary schools with API scores in deciles 1-5; that is, schools with 1999 API <= 628, which are schools eligible for AB1114 Awards.

DT1I for 4048 elementary schools with API <= 780

DT1I	Count	CumCnt	Percent	CumPct
1	1387	1387	34.26	34.26
2	2209	3596	54.57	88.83
3	433	4029	10.70	99.53
4	17	4046	0.42	99.95
5	2	4048	0.05	100.00
N=	4048			

The table above indicates that 89% of the 4048 elementary schools having API 780 or less would meet or exceed the school-wide API target with each student increasing 2 percentile points on each test. More than a third of the 4048 schools would meet or exceed the school-wide API target with each student increasing a single percentile points on each test. Because for most Stanford 9 tests, over most of their range, one additional correct answer translates into an increase or 1 or 2 percentile points (more for the shorter tests), a rough correspondence would be that for most of the elementary schools a single additional question correct on each test by each student would be sufficient to meet or exceed the school-wide API target. (Of course, improvement doesn't have to be uniform across the tests or over students, but that simplification makes improvement easier to describe.)

Because for the Award Programs the numerically significant subgroups also matter, we can also compute the improvement required to meet these additional criteria. The short version is that all numerically significant subgroups also meet their corresponding growth target for 90% of the schools with DT1I = 1, for 98% of the schools with DT1I = 2, 99% of the schools with DT1I = 3, and for all the schools with DT1I = 4,5. (More detailed breakdown given in the Lots More section).

DT2I for 2413 elementary schools in Deciles 1-5

DT2I	Count	CumCnt	Percent	CumPct
2	149	149	6.17	6.17
3	975	1124	40.41	46.58
4	733	1857	30.38	76.96
5	498	2355	20.64	97.60
6	51	2406	2.11	99.71
7	6	2412	0.25	99.96
8	1	2413	0.04	100.00
N=	2413			

As would be expected, the DT2I numbers are larger than DT1I for two reasons: it should require more improvement to meet the doubled growth target, and the subset of schools in Deciles 1-5 have larger numerical growth targets than the schools in deciles 6-9 which are included in the DT1I table. That said, more than three-quarters of the elementary schools in Deciles 1-5 meet or exceed the AB1114 school-wide target with each student gaining four percentile points on each test. Almost half of the elementary schools in Deciles 1-5 meet or exceed the AB1114 school-wide target with each student gaining three percentile points on each test. A rough equivalence to a 3 or 4 percentile point increment would be each student getting two additional questions correct on each of the Stanford 9 tests.

For the Award Programs AB1114, numerically significant subgroups also must meet their targets (.8 times the doubled school-wide improvement). All numerically significant subgroups also meet their corresponding growth target for 89% of the schools with DT2I = 2, for 96% of the schools with DT2I = 3, for 98% of the schools with DT2I = 4, for 99% of the schools with DT2I = 5, and for all the schools with DT2I = 6,7,8 (more detailed breakdown in Lots More section).

Preliminary year 2000 school-level scores provide an opportunity to compare these improvement calculations with the actual proportions of school-wide scores that met the growth targets. For Elementary Schools, data on 4801 schools (48 missing) shows that overall 89% met the school-wide target, for 4007 schools with 1999 API <= 780 89% met the school-wide target, and for 2400 schools in 1999 deciles 1-5, 72% met the doubled growth target. The growth target proportion matches up with DT1I = 2, whereas the doubled growth target proportion matches up with DT2I closer to 4. Why are these values a bit different from the correspondence with the amount of API change of k=4 or 5? It's a consequence of the heterogeneity among schools that was noted in the prior discussion. Even though on the average schools increased an amount corresponding to individual improvement of 4 or 5 percentile points, some schools (approximately 10%) had much smaller improvement, or even decline, and thus had scores that did not meet the API target. Other schools increased much more to balance out. That's why we see that 89% of schools have year 2000 school-wide scores that met their API target, rather than the 99% predicted by the uniform incrementation for k=4 or 5 (in the DT1I Table).

end of First Pass: Improvement in API

First Pass: Demographic Measures and API Scores

The intent here is to provide some data on what may be a controversial topic. The first analyses use school level data from CA elementary schools: API scores and the SCI, the "School Characteristics Index". The SCI, computed by CDE for each school, is "a composite of the schools demographic characteristics" [see for example the "Parent Guide to the Similar Schools Ranks based on the Academic Performance Index" on the PSAA web-site]. Lots More contains a second set of analyses at the individual level, using individual scores on two similar demographic measures (Parent Education and the classification of a student into a Socially Disadvantaged subgroup or not).

School-level Analysis

Each school has an SCI value; for elementary schools these range from 120 to 190 with a median of 154. The correlation between API and SCI for the 4849 elementary schools is .924, which is taken by educational researchers and others to indicate a very strong relation between school results and demographic characteristics (and this dogma appears in many press reports). In the Lots More section, scatterplots of 'API' vs 'SCI' are shown, which reveal considerable range on the API for a chosen level of SCI (even though the correlation is .924).

In the API reporting, the SCI is used to identify the "100 other schools with similar demographic characteristics" that are listed as Similar Schools on the API web-site. For elementary schools, this list, composed of the 50 schools with closest SCI scores above the school and the 50 SCI scores below the school, comprises a (reasonably narrow) 2% slice out of the distribution of elementary schools.

The data analysis exercise in the First Pass is to examine a quantity I'll name as "Range Similar School API", abbreviated as RangeSimSAPI when necessary. As indicated above, each school has associated with it a list of 100 similar schools (closest neighbors on the SCI index). For those 100 'similar' schools how similar are their API scores? Specifically, obtain the range of the corresponding 100 API scores (maxAPI - minAPI). That's the "Range Similar School API". Anyone can do this calculation for a specific individual school using the listing available from the PSAA web-site; the results below are simply the consequence of repeating that calculation 4849 times.

Range Similar School API for all Elementary Schools

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
RangeSimSAPI	4849	281.50	277.00	243.00	304.00	154.00	522.00

Range Similar School API for all Elementary Schools at each State Decile

	Range Similar School API						
CA Decile	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	478	326.24	294.00	279.75	374.00	209.00	522.00
2	490	322.36	301.00	276.00	374.00	209.00	522.00
3	477	307.44	290.00	260.50	354.00	200.00	522.00
4	488	295.78	286.00	253.00	317.00	205.00	522.00
5	480	284.57	279.00	249.00	303.75	198.00	522.00
6	487	271.97	272.00	247.00	292.00	203.00	464.00
7	485	270.79	265.00	246.00	288.00	181.00	407.00
8	491	270.81	265.00	243.00	290.00	182.00	389.00
9	480	252.38	258.00	217.00	280.00	154.00	349.00
10	493	214.22	208.00	192.00	220.00	165.00	349.00

The Statewide result at the top of the table says that half the Elementary Schools show a range of their Similar Schools API scores of at least 277 points, and 75 percent of elementary have a range of their Similar Schools API scores of at least 243 points. A good way to calibrate these numbers is to note that for elementary schools the statewide decile categories typically span 40-45 API points. Thus 243 points represents a span of 5 to 6 statewide deciles and the median range 277 represents a span of about 6 (or more) statewide deciles.

The second part of the table breaks down the Range Similar School API for each State Decile. That is, there are 490 elementary schools placed in the second state decile. Half of those schools have Range Similar School API of over 300 points, and 75 percent of those schools have Range Similar School API of over 275 points. The table shows that indications from the entire state data also hold up when examined for each decile; for schools in the bottom four deciles 75% of the schools at each decile have Range Similar School API of at least 250 points.

I would submit that these rather wide ranges of API scores for schools having quite similar demographic measures should create some hesitancy in making the claims frequently seen in the press that demographic characteristics predominately determine the school performance: e.g., as the monikers "Affluent Performance Index" or "Affluent Parent Index" insinuate. Certainly, it is very rare for a school drawing from a student population regarded as highly advantaged to score extremely poorly. Similarly, most often a school drawing from a student population regarded as highly disadvantaged does not obtain a high API score. But, those facts can be over-interpreted.

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End First Pass

LOTS MORE

This section repeats the three topics covered in the First Pass. The purpose is to provide more data analysis details and to add the results for Middle Schools and High Schools. The narration of the tables and figures that follow is sparse; hopefully, the discussion in First Pass is sufficient to guide the presentation below. It is anticipated that a reader will dip into Lots More based on a specific interest or item raised in First Pass, rather than to attempt a straight-through reading.

The data used in this report consist of 1999 data for 4849 Elementary Schools (4 K-12 charter schools designated as Elementary Schools were set aside), 837 High Schools (for which ninth-grade scores in 181 High Schools were eliminated to match the CA API calculations), and 1118 Middle Schools (for which seventh-grade scores in 49 schools and sixth-grade scores in one school were eliminated to match the CA API calculations).

Descriptive Statistics on school API Scores

School	N	Mean	Median	Q1	Q3	Minimum	Maximum
Elem	4849	631.07	630.00	522.00	739.00	302.00	958.00
Middle	1118	632.29	633.00	534.75	725.00	345.00	950.00
High	837	620.37	620.00	540.50	697.50	297.00	966.00

Elementary and Middle schools appear to have somewhat similar statewide API distributions: nearly the same center with a slightly smaller spread for Middle Schools (indicated by the interquartile ranges above or by standard deviations of 137 for Elementary and 126 for Middle). The High School distribution has a lower central value (mean, median of 620) and a smaller spread (smaller interquartile range and standard deviation 108).

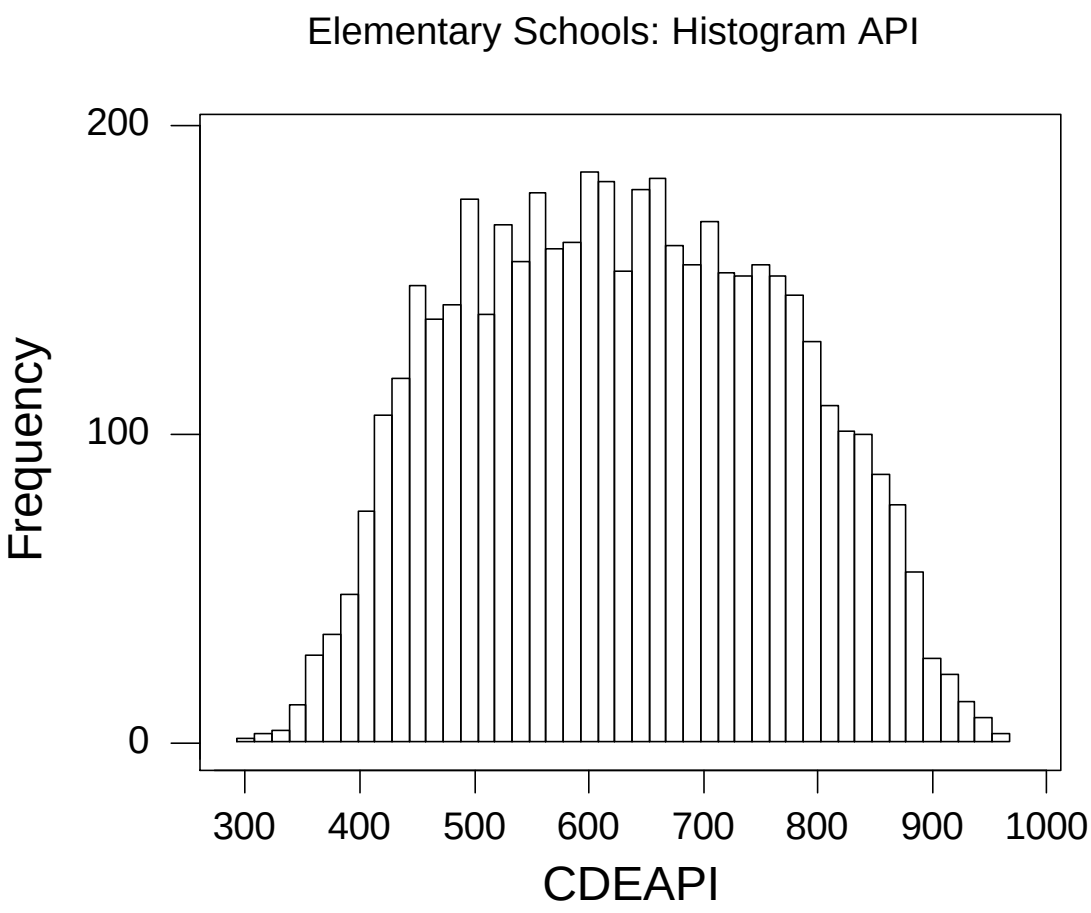
A graphical description is given on the next pages in the figures showing API Score histograms for Elementary, Middle, High Schools.

Another useful piece of the description is to have the range of scores in the Statewide Deciles that are reported for the API:

Decile Bottom and Top API Values

	Elementary		Middle		High	
CARnk	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
1	302.00	448.00	345.00	464.00	297.00	475.00
2	449.00	496.00	465.00	513.00	476.00	523.00
3	497.00	542.00	514.00	555.00	524.00	561.00
4	543.00	586.00	556.00	596.00	562.00	591.00
5	587.00	628.00	597.00	632.00	592.00	619.00
6	629.00	669.00	633.00	666.00	620.00	649.00
7	670.00	714.00	667.00	706.00	650.00	682.00
8	715.00	762.00	707.00	746.00	683.00	714.00
9	763.00	817.00	747.00	801.00	715.00	759.00
10	818.00	958.00	802.00	950.00	760.00	966.00

For Elementary Schools deciles have median width 45 points, whereas Middle School deciles have median width of 40 points. High Schools deciles are narrower still with median width 31 points.


Elementary Schools: Histogram API
Frequency
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100
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300
400
500
600
700
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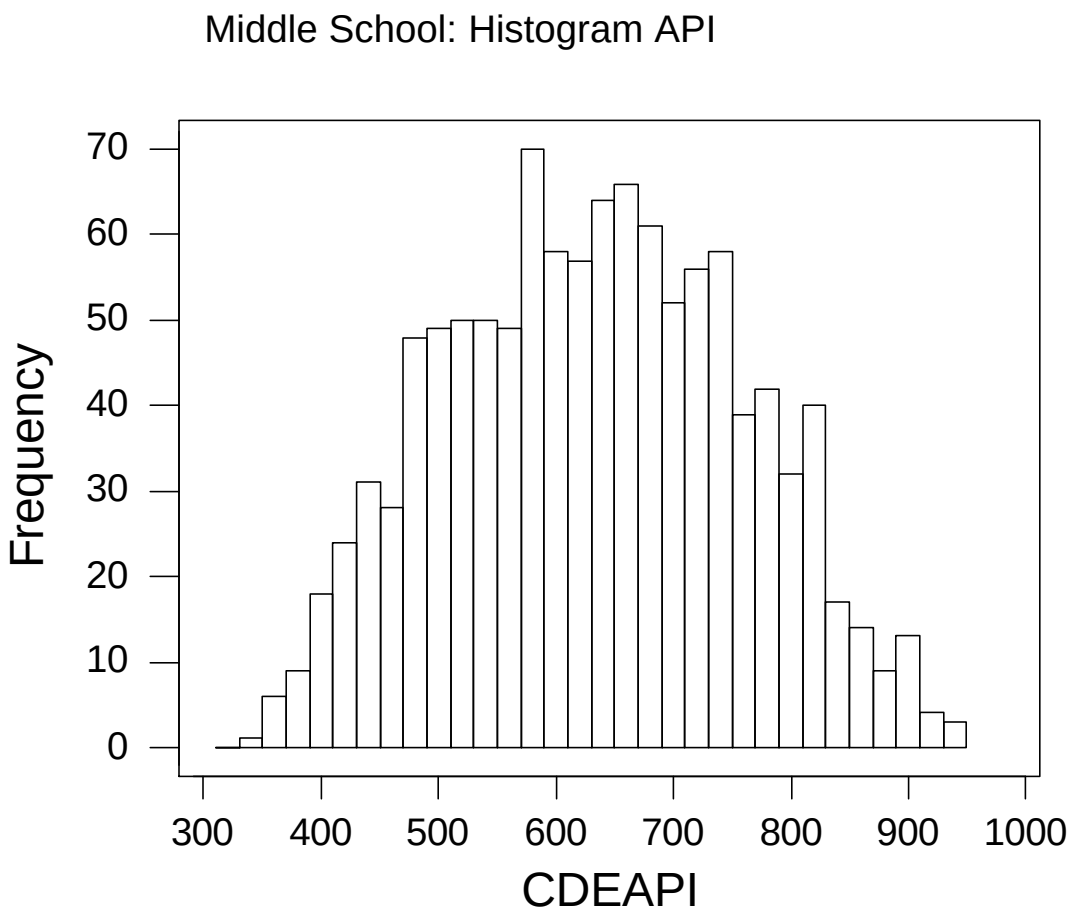
900
1000
CDEAPI


Middle School: Histogram API
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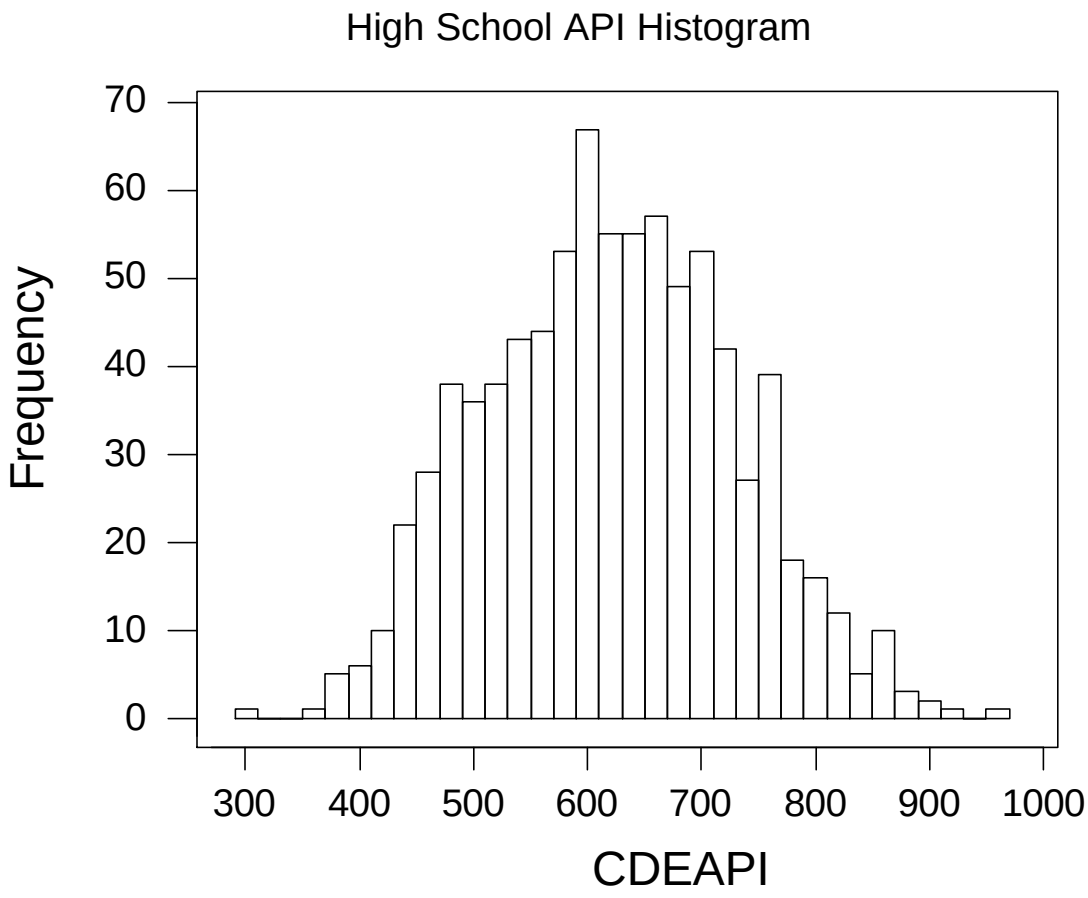
High School API Histogram
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60
50
40
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20
10
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400
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600
700
800
900
1000
CDEAPI

A. Augmented Presentation:
Interpretation of API scores in terms of PAC measures

As in First Pass, proportion-at-or-above-cutoff, PAC, measures are expressed in a (0,1) proportion scale (rather than 0,100 percentage).

For elementary schools define two PAC measures as:

PAC50 = .4*PAC50Math + .3*PAC50Read + .15*PAC50Lang + .15*PAC50Spell

PAC25 = .4*PAC25Math + .3*PAC25Read + .15*PAC25Lang + .15*PAC25Spell

The PAC25 measure could provide useful information on lower-scoring schools. Each subject-specific PAC is computed for all API-included students (over grades).
For Middle Schools and High Schools separate PAC measures are computed for grade 9-11 students and grade 2-8 students (when both are present), and as in the school-wide API calculation, the school score is a weighted average of these two.

For included students in grade 8 or lower
PAC50 = .4*PAC50Math + .3*PAC50Read + .15*PAC50Lang + .15*PAC50Spell
PAC25 = .4*PAC25Math + .3*PAC25Read + .15*PAC25Lang + .15*PAC25Spell

For students in grades 9-11
PAC50 = .2*PAC50Math + .2*PAC50Read + .2*PAC50Lang +
.2*PAC50Science + .2*PAC50SocialScience
PAC25 = .2*PAC25Math + .2*PAC25Read + .2*PAC25Lang +
.2*PAC25Science + .2*PAC25SocialScience

Descriptive Statistics: API, PAC25, PAC50

Elementary Schools

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API	4849	631.02	629.63	521.63	738.50	301.56	958.13
PAC50	4849	0.46811	0.45514	0.29968	0.62830	0.06302	0.96716
PAC25	4849	0.69064	0.70728	0.55310	0.83942	0.18527	0.99817

Middle Schools

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API	1118	632.23	633.06	534.47	724.63	345.44	949.50
PAC50	1118	0.46291	0.45425	0.30885	0.60599	0.08084	0.95630
PAC25	1118	0.70261	0.72131	0.58694	0.83212	0.26013	0.99402

High Schools

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
API	837	620.32	620.13	540.06	697.19	297.19	965.88
PAC50	837	0.45254	0.44739	0.32510	0.57001	0.04157	0.97986
PAC25	837	0.70879	0.71777	0.61664	0.81183	0.18658	0.99780

Correlations: API, PAC50, PAC25

Elementary

	API	PAC50
PAC50	0.997	
PAC25	0.990	0.979

Middle

	API	PAC50
PAC50	0.998	
PAC25	0.988	0.978

High

	API	PAC50
PAC50	0.998	
PAC25	0.986	0.977

API Scores Corresponding to a Specified PAC value

First, repeat the presentation in First Pass for Schools with PAC50 = .50, adding Middle and High Schools in the table below. The 77 Elementary Schools have PAC50 values from .495 to 0.505; the 39 Middle and 46 High Schools have PAC50 values from .49 to 0.51. The selected group of Middle Schools has slightly higher API scores and the group of High Schools somewhat lower API scores than the Elementary Schools.

API scores for Schools with PAC50 values near .50

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
Elem	77	659.31	659.75	654.44	664.50	631.75	677.75
Middle	39	661.55	662.00	657.88	665.50	643.00	674.75
High	46	651.99	651.50	646.75	656.09	638.50	670.75

Additional displays using the PAC25 measure.
A calibration for the lower end of the API scale is provided by looking at schools having a PAC25 near .50 (i.e. very loosely speaking, half the students scoring at or above the national 25th percentile). In the table below the 71 Elementary Schools have PAC25 values from .495 to 0.505, and the 24 Middle and 21 High Schools have PAC25 values from 0.49 to 0.51.

API scores for Schools with PAC25 values near .50

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
Elem	71	487.26	486.88	481.63	492.94	461.06	512.13
Middle	24	478.80	477.66	474.75	481.80	465.13	514.13
High	21	460.90	459.44	453.38	469.59	448.69	475.56

In somewhat the same spirit of thinking of PAC50 = .50 "matching" the national score distribution, PAC25 = .75 provides a useful calibration. In the table below the 83 Elementary Schools have PAC25 values from .745 to 0.755; the 48 Middle and 49 High Schools have PAC50 values from .74 to 0.76. The selected schools have API scores reasonably similar to the schools with PAC50 = .50.

API scores for Schools with PAC25 values near .75

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
Elem	83	661.19	660.00	653.00	670.00	633.00	686.00
Middle	48	656.39	653.56	646.75	662.91	635.50	694.13
High	49	646.36	647.00	637.50	655.44	621.25	677.50

Describing PAC data for a slice on API

The tables on the next two pages extend the First Pass presentation which used Elementary Schools and PAC50. The first page is PAC50 for Elementary, Middle, and High Schools. The second page of tables repeats that presentation for PAC25 (which may be most relevant for lower API decile schools).

Each table takes schools in a narrow slice on API scores (e.g. near 800) and displays a summary of the corresponding PAC score distribution (i.e., median, quartiles, and min,max). On the PAC50 tables, Elementary, Middle, and High Schools are in reasonably close accord (Elementary and Middle Schools are closest). On the PAC25 tables High Schools appear to have somewhat higher (.03 to .04) PAC25 values at each API slice than Elementary and Middle Schools).

Examples of the kind of observations that these tables are intended to communicate are:
API scores near 800 roughly corresponds to a PAC50 of .73 (closer to .74 for High Schools).
API scores near 600 roughly corresponds to a PAC25 of two-thirds (closer to .7 for High Schools). Or to a PAC50 of approximately two-fifths.
API scores near 500 roughly corresponds to a PAC50 of a little more than one-quarter. Or to a PAC25 of a little more than one-half (see also previous page).

Describing PAC50 data for a slice on API for Elementary Schools

	PAC50				
API slice	N	Median	Q1	Q3	Minimum	Maximum
399:401.	17	0.14816	0.14238	0.15303	0.13531	0.16812
449:451.	36	0.20439	0.19896	0.20828	0.18042	0.22684
499:501.	33	0.26855	0.25815	0.27423	0.23422	0.29852
549:551.	34	0.34482	0.33199	0.35062	0.32233	0.35999
599:601.	36	0.41525	0.40485	0.42101	0.36658	0.43719
649:651.	32	0.48489	0.47955	0.49368	0.44733	0.50891
699:701.	32	0.56165	0.55341	0.56812	0.54285	0.58984
749:751.	32	0.64435	0.63846	0.65369	0.61536	0.68982
799:801.	30	0.72540	0.72012	0.73212	0.70935	0.75159
849:851.	16	0.80756	0.80414	0.81479	0.80042	0.81982
895:905.	16	0.88544	0.87830	0.89365	0.87622	0.89697

Describing PAC50 data for a slice on API for Middle Schools

	PAC50				
API slice	N	Median	Q1	Q3	Minimum	Maximum
395:405.	10	0.13026	0.12556	0.14023	0.10434	0.15115
445:455.	19	0.19202	0.18652	0.19858	0.17422	0.20737
495:505.	23	0.26050	0.25372	0.26886	0.23569	0.27417
545:555.	27	0.33221	0.32458	0.33960	0.31128	0.35907
595:605.	30	0.40640	0.40059	0.41487	0.36371	0.42035
645:655.	37	0.47949	0.47336	0.48840	0.46252	0.50964
695:705.	21	0.56335	0.55847	0.56885	0.54407	0.58191
745:755.	28	0.64612	0.64035	0.65253	0.63196	0.66394
795:805.	19	0.72668	0.72351	0.73535	0.71631	0.74353
845:855.	8	0.80908	0.80118	0.81378	0.79993	0.82507
895:905.	8	0.88641	0.87967	0.88940	0.87537	0.89929

Describing PAC50 data for a slice on API for High Schools

	PAC50				
API slice	N	Median	Q1	Q3	Minimum	Maximum
395:405.	5	0.13116	0.11775	0.14079	0.11533	0.14731
445:455.	15	0.18875	0.18677	0.20068	0.18250	0.21405
495:505.	19	0.26678	0.25854	0.27307	0.23441	0.27899
545:555.	27	0.33899	0.32941	0.34412	0.32080	0.36029
595:605.	35	0.41614	0.40887	0.42542	0.38977	0.43445
645:655.	32	0.49896	0.49409	0.50302	0.48340	0.51343
695:705.	28	0.57538	0.56979	0.58032	0.55969	0.59375
745:755.	16	0.65753	0.65463	0.66400	0.64746	0.68164
795:805.	10	0.73816	0.73291	0.74002	0.72705	0.74243
845:855.	5	0.81519	0.81464	0.82043	0.81445	0.82153

Describing PAC25 data for a slice on API for Elementary Schools

		PAC25				
API slice	N	Median	Q1	Q3	Minimum	Maximum
399:401.	17	0.36243	0.35648	0.36581	0.34888	0.36835
449:451.	36	0.44174	0.43158	0.44931	0.41357	0.47589
499:501.	33	0.52722	0.52081	0.53455	0.49896	0.54980
549:551.	34	0.59479	0.58508	0.60150	0.54407	0.62073
599:601.	36	0.66309	0.65186	0.67300	0.62805	0.70251
649:651.	32	0.73621	0.72372	0.74530	0.70483	0.77881
699:701.	32	0.80176	0.79095	0.80768	0.74060	0.82593
749:751.	32	0.84918	0.83792	0.85544	0.80554	0.87793
799:801.	30	0.89813	0.88721	0.91031	0.87500	0.93005
849:851.	16	0.93744	0.92688	0.94510	0.89661	0.95142
895:905.	16	0.96643	0.96222	0.97336	0.95288	0.98352

Describing PAC25 data for a slice on API for Middle Schools

		PAC25				
API slice	N	Median	Q1	Q3	Minimum	Maximum
395:405.	10	0.36789	0.35881	0.37770	0.34851	0.38507
445:455.	19	0.45190	0.44397	0.46179	0.42181	0.47296
495:505.	23	0.53748	0.52783	0.54260	0.51782	0.57129
545:555.	27	0.60449	0.59741	0.61389	0.56909	0.62427
595:605.	30	0.67847	0.67203	0.68790	0.65344	0.73657
645:655.	37	0.74316	0.73407	0.75165	0.71240	0.76660
695:705.	21	0.80737	0.78662	0.81647	0.77234	0.83362
745:755.	28	0.85272	0.84415	0.86587	0.81628	0.89087
795:805.	19	0.90320	0.89844	0.91138	0.86353	0.91602
845:855.	8	0.94031	0.93893	0.95013	0.93848	0.95300
895:905.	8	0.96570	0.96426	0.97040	0.95703	0.98242

Describing PAC25 data for a slice on API for High Schools

		PAC25				
API slice	N	Median	Q1	Q3	Minimum	Maximum
395:405.	5	0.40491	0.39212	0.40793	0.38464	0.40973
445:455.	15	0.48962	0.47510	0.49701	0.46490	0.50879
495:505.	19	0.55798	0.55408	0.56531	0.53894	0.58569
545:555.	27	0.63269	0.61938	0.64099	0.60156	0.65466
595:605.	35	0.69690	0.68530	0.70862	0.66309	0.73218
645:655.	32	0.75513	0.73669	0.76184	0.72473	0.77930
695:705.	28	0.81567	0.81055	0.81931	0.78943	0.83435
745:755.	16	0.86584	0.85135	0.87354	0.82629	0.90784
795:805.	10	0.90472	0.89252	0.91772	0.87720	0.92383
845:855.	5	0.92761	0.92102	0.94250	0.91821	0.94727

Redundant Alternative: Regression plots and fits for API and PAC

I promised redundancy in Lots More; as an adjunct to the previous sets of tables on roughly calibrating the API and PAC measures, the following tables and figures present a more traditional (to introductory Statistics students at least) regression approach.

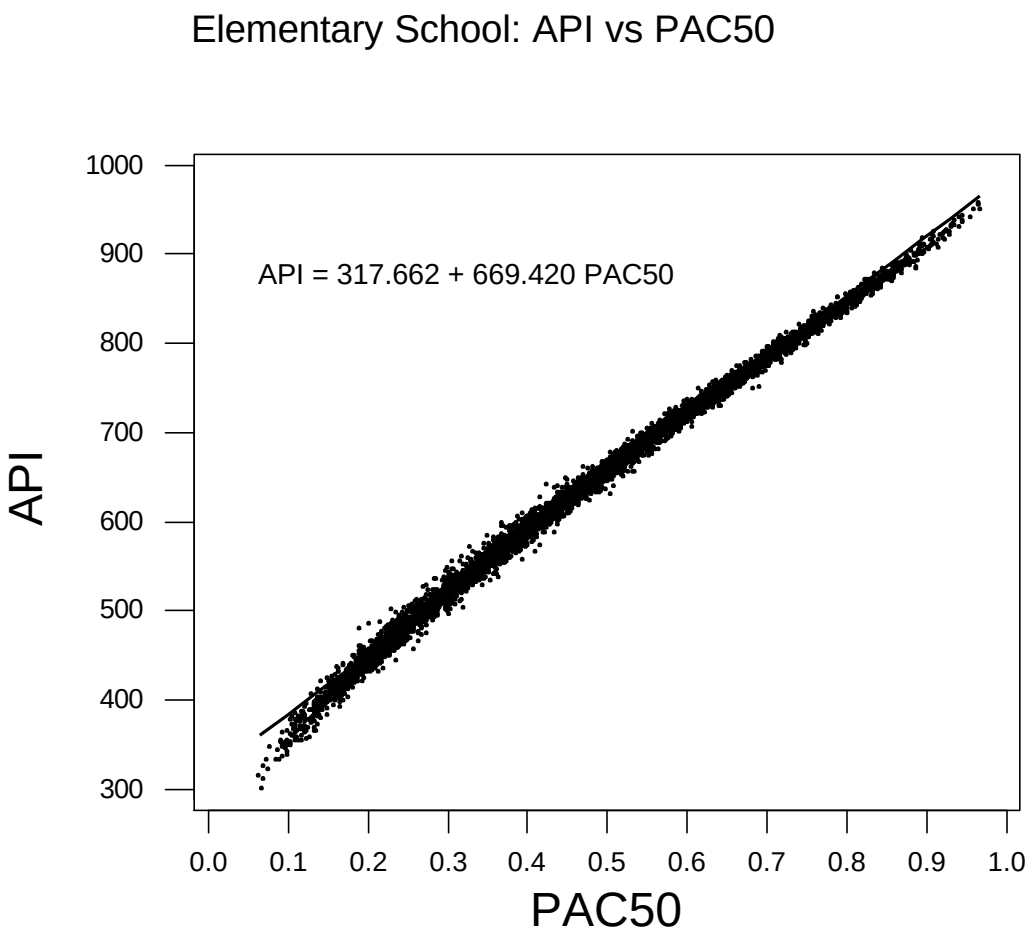
There are separate presentations for PAC50 and for PAC25. For each PAC measure there are three API vs PAC plots (for Elementary, Middle, and High Schools) each superimposed with a straight-line fit for reference. From most of the plots curvature is apparent, especially for API<450, and API>850.

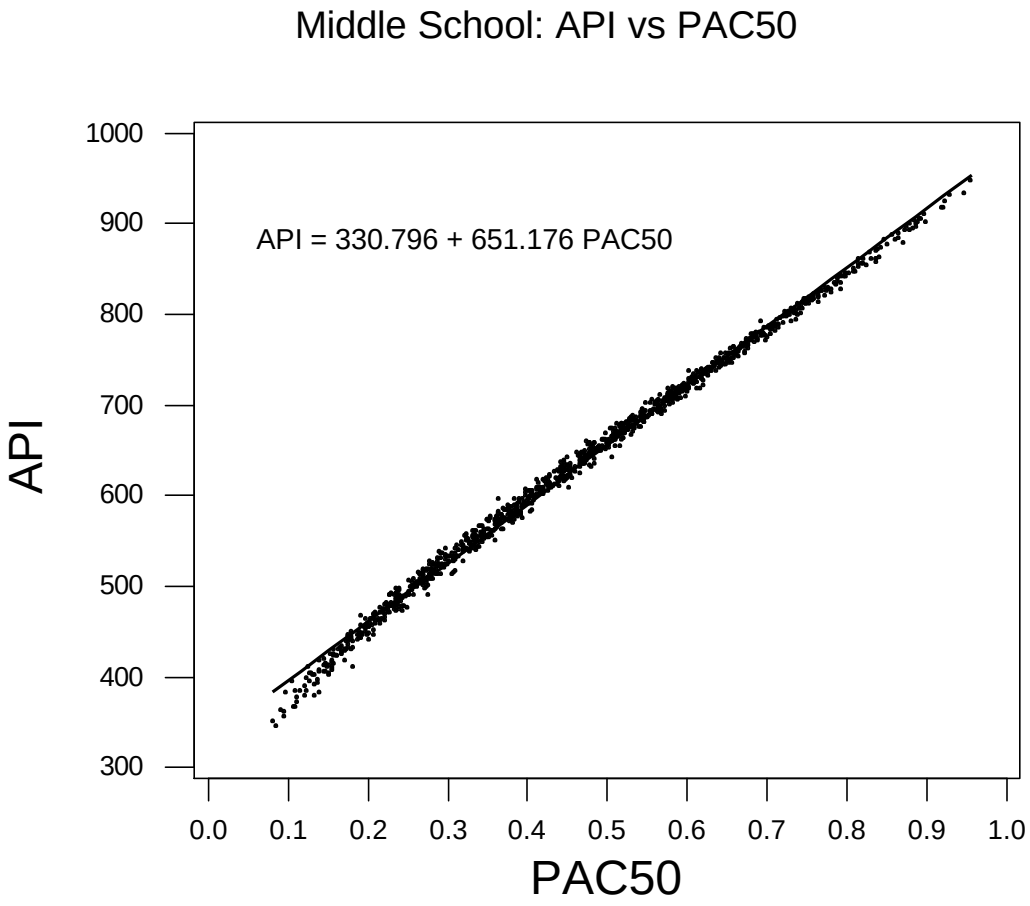
The main regression tables shows fits for quadratic regressions at PAC values .15 to .85 separately for Elementary, Middle, and High Schools. These fits indicate the same sorts of correspondences as displayed in the previous tables. Values of the fits for Elementary, Middle, and High Schools are reasonably close for both the PAC50 and PAC25 sets of regressions.

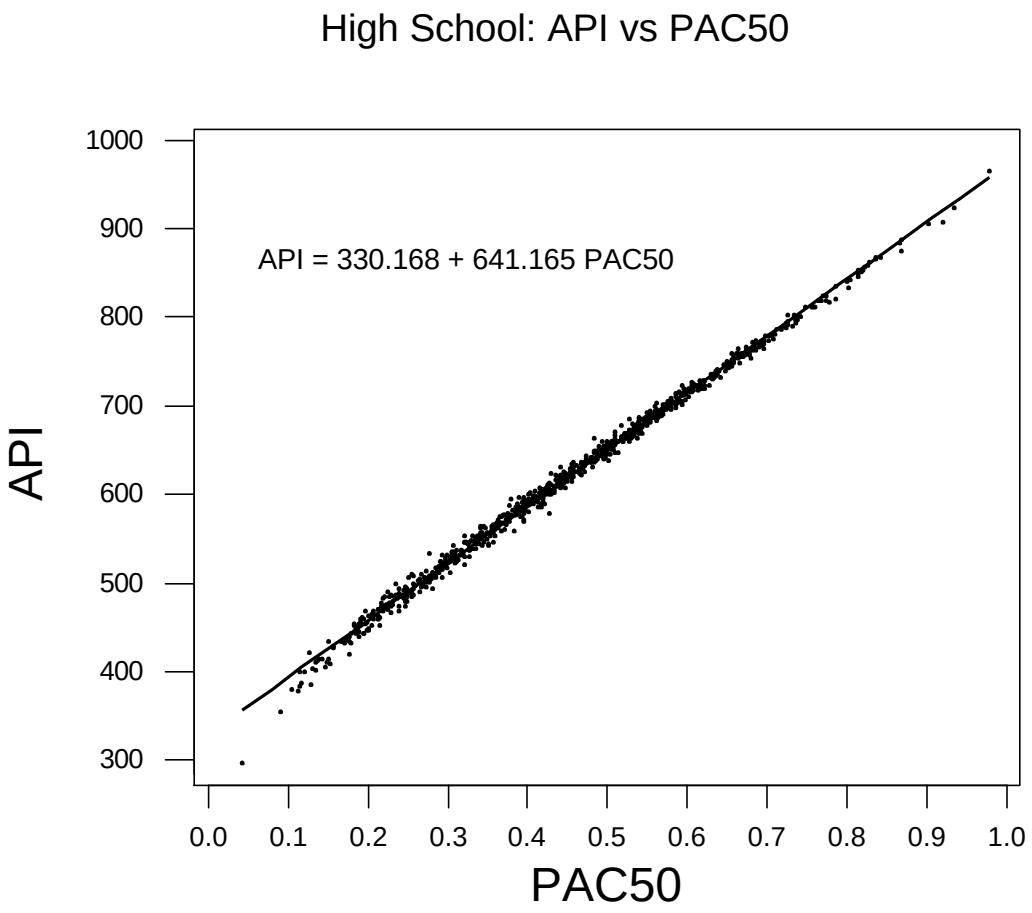
The final bit of detail are snippets of regression fit output for straight-line and quadratic fits, which is supplied for completeness.

Regression fits for API PAC50

PAC50	Elementary School Quadratic API Fit	Middle School Quadratic API Fit	High School Quadratic API Fit
0.150	407.240	419.347	421.154
0.200	445.358	455.767	455.310
0.250	482.738	491.557	489.107
0.300	519.379	526.716	522.546
0.350	555.281	561.246	555.628
0.400	590.445	595.145	588.350
0.450	624.871	628.413	620.715
0.500	658.559	661.052	652.722
0.550	691.508	693.061	684.370
0.600	723.719	724.439	715.660
0.650	755.191	755.187	746.592
0.700	785.925	785.305	777.166
0.750	815.920	814.793	807.382
0.800	845.177	843.650	837.239
0.850	873.696	871.878	866.739


Elementary School: API vs PAC50
API = 317.662 + 669.420 PAC50
API
PAC50
1000
900
800
700
600
500
400
300
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0


Middle School: API vs PAC50
API = 330.796 + 651.176 PAC50
API
PAC50
1000
900
800
700
600
500
400
300
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0


High School: API vs PAC50
API = 330.168 + 641.165 PAC50
API
PAC50
1000
900
800
700
600
500
400
300
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0

Details of Regression Fits, PAC50

ELEMENTARY SCHOOLS

Regression Analysis: API versus PAC50

The regression equation is API = 318 + 669 PAC50

Predictor	Coef	SE Coef	T
Constant	317.662	0.374	848.87
PAC50	669.420	0.733	913.29

S = 10.40 R-Sq = 99.4% R-Sq(adj) = 99.4%

From straight-line fit can calculate that an increase in PAC50 of .0373 corresponds to an increase of 25 points on API.

Regression Analysis: API versus PAC50, PAC50^2

The regression equation is API = 288 + 814 PAC50 - 148 PAC50^2

Predictor	Coef	SE Coef	T
Constant	288.457	0.630	457.86
PAC50	814.042	2.809	289.82
PAC50^2	-147.677	2.805	-52.64

S = 8.298 R-Sq = 99.6% R-Sq(adj) = 99.6%

MIDDLE SCHOOLS

Regression Analysis: API versus PAC50

The regression equation is API = 331 + 651 PAC50

Predictor	Coef	SE Coef	T
Constant	330.796	0.674	490.59
PAC50	651.176	1.345	484.16

S = 8.656 R-Sq = 99.5% R-Sq(adj) = 99.5%

Regression Analysis: API versus PAC50, PAC50^2

The regression equation is API = 306 + 773 PAC50 - 126 PAC50^2

Predictor	Coef	SE Coef	T
Constant	306.307	1.131	270.92
PAC50	772.510	5.033	153.50
PAC50^2	-126.038	5.105	-24.69

S = 6.963 R-Sq = 99.7% R-Sq(adj) = 99.7%

HIGH SCHOOLS

Regression Analysis: API versus PAC50

The regression equation is API = 330 + 641 PAC50

Predictor	Coef	SE Coef	T
Constant	330.168	0.688	480.18
PAC50	641.165	1.424	450.21

S = 6.934 R-Sq = 99.6% R-Sq(adj) = 99.6%

Regression Analysis: API versus PAC50, PAC50^2

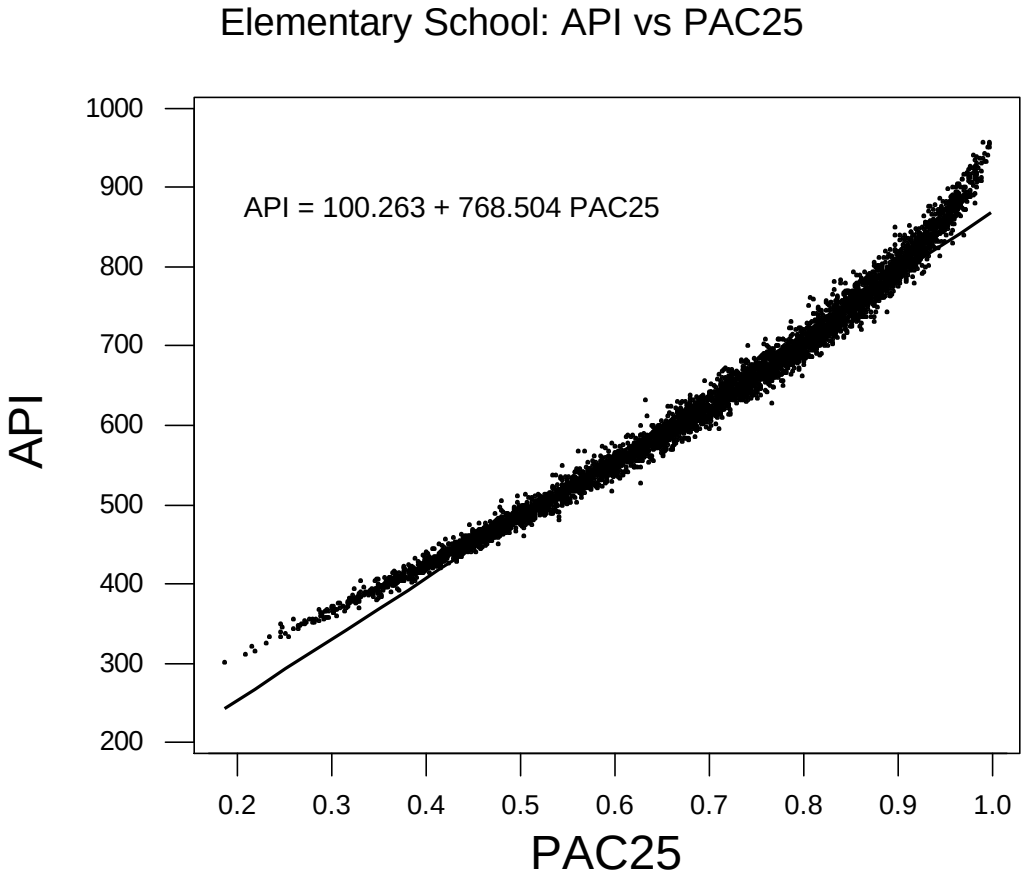
The regression equation is API = 317 + 708 PAC50 - 71.6 PAC50^2

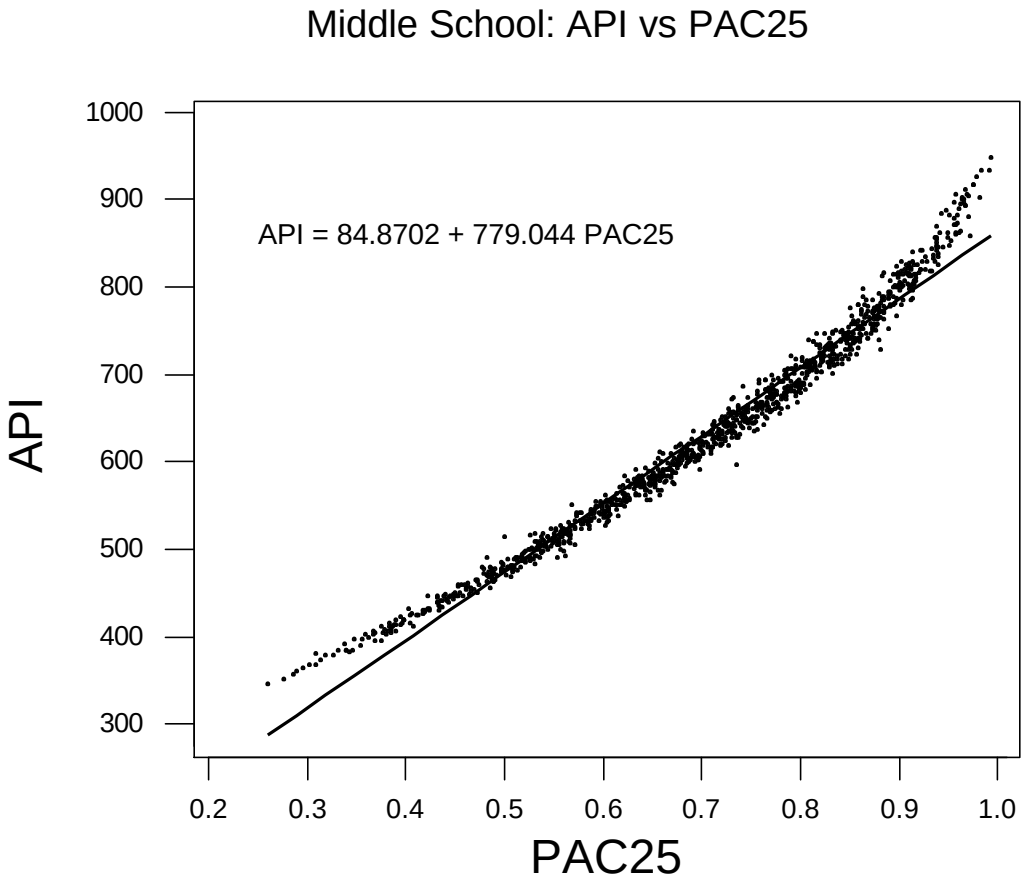
Predictor	Coef	SE Coef	T
Constant	316.538	1.380	229.41
PAC50	708.186	6.151	115.13
PAC50^2	-71.637	6.420	-11.16

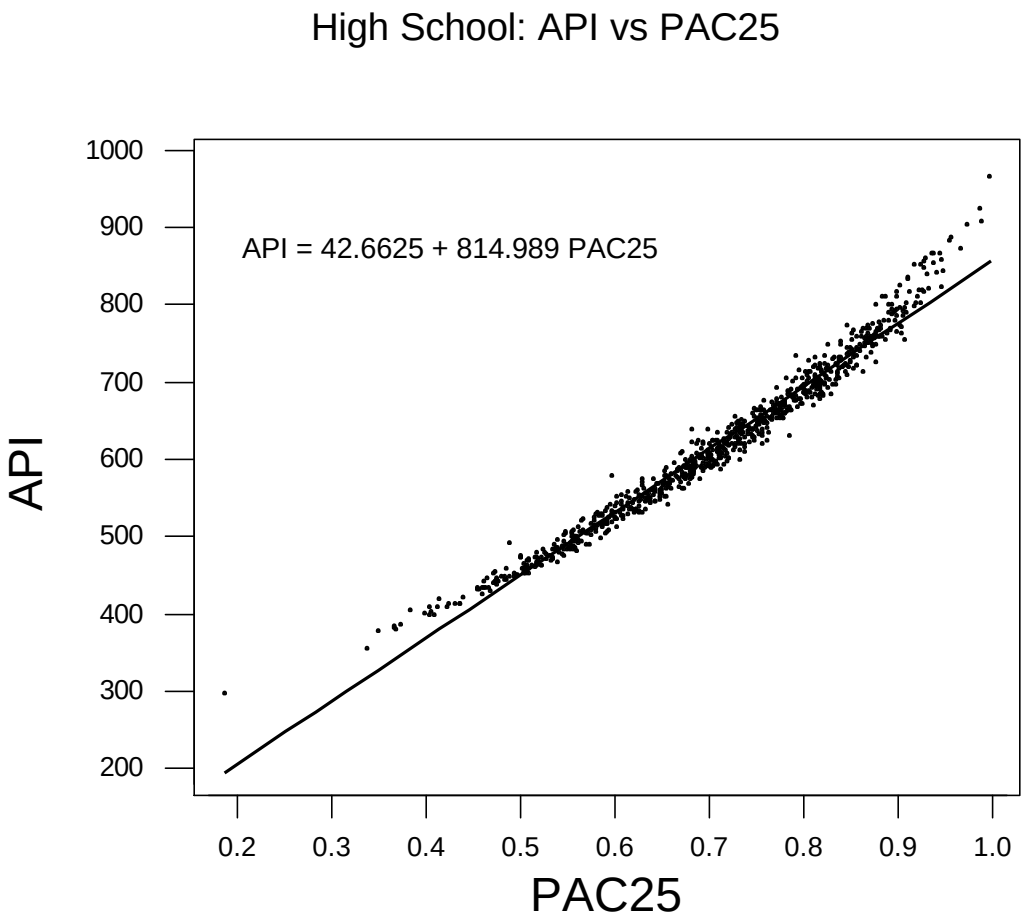
S = 6.471 R-Sq = 99.6% R-Sq(adj) = 99.6%

Regression fits for API PAC25

PAC25	Elementary Quadratic API Fit	Middle Quadratic API Fit	High Quadratic API Fit
0.150	325.134	334.920	317.296
0.200	340.528	346.976	329.079
0.250	358.274	361.738	343.705
0.300	378.374	379.207	361.172
0.350	400.826	399.382	381.483
0.400	425.632	422.263	404.635
0.450	452.791	447.851	430.630
0.500	482.302	476.146	459.467
0.550	514.167	507.146	491.147
0.600	548.384	540.854	525.669
0.650	584.955	577.267	563.033
0.700	623.879	616.387	603.239
0.750	665.155	658.214	646.288
0.800	708.785	702.747	692.179
0.850	754.768	749.986	740.912


Elementary School: API vs PAC25
API = 100.263 + 768.504 PAC25
API
PAC25
1000
900
800
700
600
500
400
300
200
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0


Middle School: API vs PAC25
API = 84.8702 + 779.044 PAC25
API
PAC25
1000
900
800
700
600
500
400
300
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0


High School: API vs PAC25
API = 42.6625 + 814.989 PAC25
API
PAC25
1000
900
800
700
600
500
400
300
200
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0

Details of Regression Fits, PAC25

ELEMENTARY SCHOOLS

Regression Analysis: API versus PAC25

The regression equation is API = 100 + 769 PAC25

Predictor	Coef	SE Coef	T
Constant	100.263	1.143	87.75
PAC25	768.504	1.603	479.39

S = 19.67 R-Sq = 97.9% R-Sq(adj) = 97.9%

Regression Analysis: API versus PAC25, PAC25^2

The regression equation is API = 293 + 143 PAC25 + 471 PAC25^2

Predictor	Coef	SE Coef	T
Constant	293.072	2.507	116.92
PAC25	143.159	7.831	18.28
PAC25^2	470.603	5.840	80.58

S = 12.86 R-Sq = 99.1% R-Sq(adj) = 99.1%

MIDDLE SCHOOLS

Regression Analysis: API versus PAC25

The regression equation is API = 84.9 + 779 PAC25

Predictor	Coef	SE Coef	T
Constant	84.870	2.669	31.80
PAC25	779.044	3.705	210.27

S = 20.12 R-Sq = 97.5% R-Sq(adj) = 97.5%

Regression Analysis: API versus PAC25, PAC25^2

The regression equation is API = 315 + 51.7 PAC25 + 541 PAC25^2

Predictor	Coef	SE Coef	T
Constant	314.991	6.005	52.45
PAC25	51.67	18.35	2.82
PAC25^2	541.28	13.54	39.98

S = 12.65 R-Sq = 99.0% R-Sq(adj) = 99.0%

HIGH SCHOOLS

Regression Analysis: API versus PAC25

The regression equation is API = 42.7 + 815 PAC25

Predictor	Coef	SE Coef	T
Constant	42.663	3.497	12.20
PAC25	814.989	4.852	167.98

S = 18.35 R-Sq = 97.1% R-Sq(adj) = 97.1%

Regression Analysis: API versus PAC25, PAC25^2

The regression equation is API = 299 + 36.7 PAC25 + 568 PAC25^2

Predictor	Coef	SE Coef	T
Constant	299.00	10.37	28.84
PAC25	36.71	30.67	1.20
PAC25^2	568.46	22.24	25.56

S = 13.75 R-Sq = 98.4% R-Sq(adj) = 98.3%

B. Augmented Presentation: Consequences of Student Level Improvement for API scores and Growth Targets

Two Formulations for Student Level Improvement

A. Homogeneneous Integer (I). Used in First Pass.
Every student increases k percentile points on each test. For elementary schools, students in grades 2-8, improvement is k points on each of the four tests. For students in grades 9-11, improvement is k points on each of the five tests. E.g., k=2 adds 2 percentile points to each score (denote as "I2").

B. Partial Incrementation (P). Provides an intermediate improvement between the levels of the Integer incrementation.
For grades 2-8:
Each student increases k percentile points on Math and k-1 on the other 3 tests (Reading, Lang, Spell for gr 2-8). E.g., k=2 adds to each score 2 percentile points on Math and 1 point on the other 3 tests (denote as "P2").
For grades 9-11:
Each student increases k percentile points on Math and Reading and k-1 percentile points on the other 3 tests (Lang, Science, Social Science). E.g., k=3 adds to each Math and Reading score 3 percentile points and adds 2 percentile points on the other 3 tests (denote as "P3").

In First Pass the Integer (I) form was used, and that's sufficient for most of the presentation here also. The alternative partial (P) incrementation is given for completeness, and in some instances this "half-step" incrementation (in the sense for example that P2 is between I1 and I2 in its effects) provides additional information.

The two main sections on improvement topics are:
1. Improvement in API Scores. For the full set of Elementary, Middle, and High Schools, show the effect on the school-wide API scores resulting from each student score increasing k percentile points on each test. Provides calibration between change in API score and average student improvement.
2. Improvement to Reach API Targets. Compute the average student improvement required to meet or exceed an API growth target. The two numbers of primary interest for school-wide scores:
   - API growth target (for most schools the API target is a rounded version of API + (40 - API/20)). Target 1.
   - For AB1114 Awards the doubled growth target (for most schools a rounded version of API + 2*(40 - API/20)). Target 2.

1. Improvement in API Scores

For further illustration, consider, for the full set of Elementary Middle and High Schools, the effect on the school-wide API scores resulting from each student score increasing k percentile points on each test. Each row is labeled by the amount of individual improvement that is applied; the table shows individual improvement from 1 percentile point on each test up to 25 percentile points on each test. Each row contains summary statistics for the 4849 school scores: median, mean and quartiles. For example, the row for which individual improvement is labeled by "I3" shows an increase by each student on each test of 3 percentile points would result in half of the Elementary schools showing an API increase of at least 25 points and three-quarters of the elementary schools showing an API increase of at least 22 points. Roughly, each percentile point of individual improvement translates into an increase of 8 points on the school-wide API.

Preliminary year 2000 school-level API scores provide an opportunity to compare these artificial calculations with the actual improvement. The most useful comparison is to calibrate the mean or median observed change in API scores in terms of the improvement calculations presented in these tables.

Increase in API Scores

All 4849 Elementary Schools

Individual Improvement	Median Change in API	Mean Change in API	Quartiles of Change Q1	Q3
I1	7.125	7.14007	5.75	8.5
I2	16.875	16.5623	14.625	18.75
I3	24.75	24.1975	21.625	27.375
I4	31.75	30.9332	27.75	34.875
I5	42.75	41.2936	37.25	46.625
I6	50.75	48.8499	44.125	55.25
I7	58.375	55.9094	50.25	63.5
I8	67.25	64.261	56.75	73.875
I9	77	73.394	64.375	84.75
I10	83.5	79.6672	69.25	92.625
I11	94	89.8095	77.375	105
I12	103.375	98.9091	83.75	117.25
I13	111.875	107.425	89.875	128.5
I14	121.125	116.731	96.375	140.625
I15	130.125	125.865	102.625	152.75
I16	140.125	135.888	109.125	166.25
I17	148.875	145.694	115.875	179.125
I18	157.625	154.415	122	189.875
I19	163.75	160.751	126.25	198
I20	169	165.705	130.875	204
I21	174.25	170.376	134.5	209.75
I22	180.375	176.106	139.875	216.5
I23	186.25	181.194	144.25	222.625
I24	190.75	185.262	147.75	227.5
I25	197.125	191.448	152.625	235

P incrementation gives a value between k-1 and k "I" incrementation; e.g. median change in API for P2 is a 11.4.

Preliminary year 2000 school-level API scores provide an opportunity to compare these artificial calculations with the actual improvement. For Elementary Schools, summary of data on 4801 schools (48 scores missing):

Variable	N	Median	Mean	Q1	Q3	Minimum	Maximum
API change	4801	36.000	38.805	19.000	56.000	-89.000	189.000

The center of the API change distribution (median 36, mean 38.8) places it between the I4 and I5 rows in the table above. To hone in a little more the results from "P5" incrementation are:

Individual Improvement	Median Change in API	Mean Change in API	Quartiles of Change Q1	Q3
P5	35.250	34.286	31.000	38.625

So that the center of the actual change distribution falls between the predictions of P5 and I5 incrementation. As noted in First Pass the actual changes in school scores, as one would expect, are far more heterogeneous than is represented by the simple (homogeneous) improvement mechanism in the calculations.

The overall improvement table also shows that some schools have API scores that improve more from the same amount of incrementation than do other schools. For example the Quartiles of the I5 row are 37 and 47. To some extent, especially for large incrementation, the effect may be limited by the students room to improve. To provide a look at that effect, the tables below break down two rows of the overall table by 1999 API decile. The two rows I4 and I7 are chosen to roughly correspond to the median and upper quartile of the observed API change distribution for elementary schools.

Descriptive Statistics: I4 change by CARank

Variable	CARank	N	Median	Mean	Q1	Q3
I4 change	1	478	33.563	33.452	31.438	35.516
	2	490	35.000	35.053	33.047	36.875
	3	477	35.250	35.127	32.938	37.250
	4	488	34.625	34.622	32.500	36.750
	5	480	33.625	33.641	31.500	35.625
	6	487	32.500	32.628	30.625	34.750
	7	485	30.500	30.848	29.125	32.625
	8	491	28.625	28.553	26.750	30.375
	9	480	25.375	25.560	23.750	27.375
	10	493	20.250	20.063	18.125	22.500

Descriptive Statistics: I7 change by CARank

Variable	CARank	N	Median	Mean	Q1	Q3
I7 change	1	478	63.344	63.361	60.313	66.453
	2	490	65.063	64.919	62.094	67.875
	3	477	64.500	64.258	61.750	67.000
	4	488	62.875	62.765	60.000	65.469
	5	480	60.750	60.689	58.375	63.094
	6	487	58.500	58.408	55.750	61.250
	7	485	54.750	54.766	52.250	57.188
	8	491	50.875	50.668	48.500	52.875
	9	480	45.188	45.074	42.656	47.219
	10	493	35.375	34.640	31.688	38.438

Increase in API Scores

All 1118 Middle Schools

Individual Improvement	Median Change in API	Mean Change in API	Quartiles of Change Q1	Q3
I1	4.625	4.8385	4	5.375
I2	17.1875	16.7417	14.75	19.125
I3	23.25	22.7322	20.625	25.375
I4	31.125	30.333	27.5	33.75
I5	42.25	41.0235	37	46.625
I6	50.875	49.2545	44.25	56.125
I7	57.375	55.7066	50	63.25
I8	67.0625	65.0141	57.875	74.375
I9	75.4375	73.1364	64.625	84.375
I10	85.625	82.9345	72.625	96.125
I11	93.125	90.8409	78.75	106
I12	103	100.561	86	118.375
I13	111.063	108.615	92.25	128.5
I14	120.313	117.737	99.5	140.125
I15	128.625	126.623	105.375	151.125
I16	137.688	135.519	112	162.25
I17	145.5	143.042	117.375	172
I18	153.563	151.807	125	182.25
I19	161.438	159.611	131	192.25
I20	168.813	166.208	136.75	199.625
I21	171.875	169.135	139.375	203.25
I22	180	176.764	145.625	212.75
I23	183.188	180.082	148.625	216.25
I24	187.875	184.816	152.875	222
I25	195.5	192.038	158.75	231

Preliminary year 2000 school-level API scores provide an opportunity to compare these artificial calculations with the actual improvement. For Middle Schools, summary of data on 1111 schools (7 scores missing):

Variable	N	Median	Mean	Q1	Q3	Minimum	Maximum
API change	1111	20.000	21.445	7.000	36.000	-49.000	126.000

The center of the API change distribution (median 20, mean 21.4) places it between the I2 and I3 rows in the table above. To hone in a little more the results from "P3" incrementation are:

Individual Improvement	Median Change in API	Mean Change in API	Quartiles of Change Q1	Q3
P3	19.010	19.500	16.719	21.750

So that the center of the actual change distribution falls between the predictions of P3 and I3 incrementation. As noted in First Pass the actual changes in school scores, as one would expect, are far more heterogeneous than is represented by the simple (homogeneous) improvement mechanism in the calculations.

The overall improvement table also shows that some schools have API scores that improve more from the same amount of incrementation than do other schools. For example the Quartiles of the I5 row are 37 and 47. To some extent, especially for large incrementation, the effect may be limited by the students room to improve. To provide a look at that effect, the tables below break down two rows of the overall table by 1999 API decile. The two rows I3 and I5 are chosen to roughly correspond to the median and upper quartile of the observed API change distribution for middle schools.

Descriptive Statistics: I3 change by CARank

Variable	CARank	N	Median	Mean	Q1	Q3
I3 change	1	110	25.531	25.435	23.688	26.766
	2	111	26.125	26.273	24.750	27.500
	3	110	25.375	25.466	24.000	26.625
	4	115	24.875	24.817	23.500	26.250
	5	111	24.125	24.102	22.625	25.375
	6	110	23.375	23.365	21.969	24.250
	7	111	22.375	22.366	21.000	23.750
	8	115	21.125	21.240	20.250	22.375
	9	110	19.313	19.293	17.844	20.375
	10	115	15.625	15.237	13.500	17.125

Descriptive Statistics: I5 change by CARank

Variable	CARank	N	Median	Mean	Q1	Q3
I5 change	1	110	47.563	47.501	45.641	49.641
	2	111	47.875	48.391	46.500	50.250
	3	110	46.750	46.868	45.219	48.531
	4	115	45.625	45.403	43.500	47.500
	5	111	43.375	43.816	41.875	45.750
	6	110	41.375	41.747	40.094	43.156
	7	111	40.125	39.950	38.125	41.625
	8	115	37.750	37.559	36.125	39.000
	9	110	33.250	33.456	31.750	35.406
	10	115	27.125	26.098	23.125	29.375

Increase in API Scores

All 837 High Schools

Individual Improvement	Median Change in API	Mean Change in API	Quartiles of Change Q1	Q3
I1	7.5625	7.81623	6.625	8.75
I2	17.875	17.4828	15.25	20
I3	24.375	24.1345	22	26.1875
I4	34.375	33.6115	30.625	37.5
I5	44.875	44.4101	40.25	49.375
I6	55.375	54.5127	49	61.1875
I7	62.875	61.5795	55.625	69.25
I8	71	69.8831	62.375	78.625
I9	79	77.4757	69.375	87.25
I10	90.125	88.3848	79.25	99.25
I11	97.375	95.9374	85.75	108.75
I12	107.25	105.391	93	120.25
I13	117.125	115.062	101	132
I14	126.625	124.908	110.25	143.5
I15	134.5	132.626	115.125	153.125
I16	142.125	140.398	121.5	162.75
I17	152.625	151.091	129.75	175.5
I18	160.25	158.687	136.5	184.375
I19	167.625	165.928	142.375	192.75
I20	172.5	170.524	146.375	197.875
I21	177.875	175.783	151.5	204.375
I22	184.375	182.099	157.25	211.75
I23	187.625	185.324	160	215.5
I24	194.75	191.885	165.875	222.75
I25	201.75	198.703	171.125	231.375

Preliminary year 2000 school-level API scores provide an opportunity to compare these artificial calculations with the actual improvement. For Middle Schools, summary of data on 818 schools (20 scores missing):

Variable	N	Median	Mean	Q1	Q3	Minimum	Maximum
API change	1111	12.000	13.487	-1.000	26.000	-59.000	130.000

The center of the API change distribution (median 12, mean 13.5) places it between the I1 and I2 rows in the table above. To hone in a little more the results from "P2" incrementation are:

Individual Improvement	Median Change in API	Mean Change in API	Quartiles of Change Q1	Q3
P2	11.875	11.892	10.375	13.250

So that the center of the actual change distribution falls between the predictions of P2 and I2 incrementation. As noted in First Pass the actual changes in school scores, as one would expect, are far more heterogeneous than is represented by the simple (homogeneous) improvement mechanism in the calculations.

The overall improvement table also shows that some schools have API scores that improve more from the same amount of incrementation than do other schools. For example the Quartiles of the I5 row are 40 and 49. To some extent, especially for large incrementation, the effect may be limited by the students room to improve. To provide a look at that effect, the tables below break down two rows of the overall table by 1999 API decile. The two rows I1 and I3 are chosen to roughly correspond to the median and upper quartile of the observed API change distribution for high schools.

Descriptive Statistics: I1 change by CARank

Variable	CARank	N	Median	Mean	Q1	Q3
I1 change	1	85	8.563	8.965	7.719	9.594
	2	84	8.875	9.387	7.953	10.219
	3	84	8.563	8.943	7.750	9.500
	4	82	8.000	8.354	7.500	8.750
	5	78	8.125	8.362	7.219	8.906
	6	89	7.500	7.676	6.875	8.375
	7	83	7.125	7.300	6.625	7.625
	8	84	6.875	7.271	6.375	7.469
	9	82	6.500	6.744	5.969	7.125
	10	86	5.125	5.237	4.375	5.781

Descriptive Statistics: I3 change by CARank

Variable	CARank	N	Median	Mean	Q1	Q3
I3 change	1	85	26.375	26.971	25.375	28.063
	2	84	26.625	27.156	25.500	28.000
	3	84	26.063	26.463	24.625	27.063
	4	82	25.250	25.538	24.375	26.250
	5	78	25.250	25.587	24.344	26.875
	6	89	24.375	24.399	23.063	25.375
	7	83	23.000	23.065	22.000	24.250
	8	84	22.375	23.013	21.750	23.688
	9	82	21.563	21.329	20.250	22.375
	10	86	18.438	17.980	15.875	20.000

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2. Improvement to Reach API Targets

Another approach for examining improvement in API scores is to compute the improvement required to meet or exceed an API growth target. There are two numbers of primary interest for school-wide scores.
1. API growth target; for most schools (e.g., for API < 780) the API target is a rounded version of API + (40 - API/20). Target 1
2. For AB1114 Awards the doubled growth target (for most schools a rounded version of API + 2*(40 - API/20)) is relevant. Target 2.

Use the term "DT1I" to indicate the smallest value of k for which the school-wide API target is met using the "I" form of individual improvement. Similarly, use "DT1P" to indicate the smallest value of k for which the school-wide API target is met using the "P" form of individual improvement. From the definitions DT1I will always be less than or equal to DT1P.

Furthermore, use ""DT2I" to indicate the smallest value of k for which the doubled school-wide API target is met using the "I" form of individual improvement. And "DT2P" indicates the smallest value of k for which the doubled school-wide API target is met using the "P" form of individual improvement.

The sets of tables--separately for Elementary, Middle and High-- present results for DT1I, DT1P, DT2I, DT2P in turn. It seemed most useful to present these improvement results for relevant subsets of schools. Specifically, for DT1I and DT1P, use schools with API <= 780 (i.e. schools with a growth target of 1 or more). (This restriction sets aside schools in decile 10 and for elementary and middle also the top half of decile 9.) And for DT2I and DT2P use the schools with API scores in deciles 1-5, which are schools eligible for AB1114 Awards.

For example, with schools having 1999 API <= 780, I2 incrementation (i.e. all students improve 2 percentile points on each test) would produce the results that 89% of Elementary Schools, 95% of Middle Schools, and 99% of High Schools would meet or exceed their API growth target. In each table these percentages are found in DT1I=2 row.

Also, with schools in 1999 API deciles 1-5, I3 incrementation (i.e. all students improve 3 percentile points on each test) would produce the results that 47% of Elementary Schools, 45% of Middle Schools, and 51% of High Schools would have school-wide scores meet or exceed the doubled API growth target. In each table these percentages are found in DT2I=3 row.

Following the series of overall DTXX tables, a further look is provided by the cross tabulations of DT1I by CARank (API deciles). The rows of these tables provide the distribution of DT1I values at each API decile.

Preliminary year 2000 school-level scores provide an opportunity to compare these artificial calculations with some of the actual California data. For Elementary, Middle, and High Schools two tables are shown: the proportion of schools in each of deciles 1-10 whose year 2000 API meet the growth target, and the proportion of schools in each of deciles 1-10 whose year 2000 API meet the doubled growth target.

For Elementary Schools, data on 4801 schools (48 missing) shows that overall 89% met the school-wide target, for 4007 schools with 1999 API <= 780 87% met the school-wide target, and for 2400 schools in 1999 deciles 1-5, 72% met the doubled growth target.

For Middle Schools, data on 1111 schools (7 missing) shows that overall 74% met the school-wide target, for 966 schools with 1999 API <= 780 71% met the school-wide target, and for 554 schools in 1999 deciles 1-5, 44% met the doubled growth target.

For High Schools, data on 818 schools (20 missing) shows that overall 57% met the school-wide target, for 765 schools with 1999 API <= 780 55% met the school-wide target, and for 399 schools in 1999 deciles 1-5, 30% met the doubled growth target.

Later on in this section, the additional requirement that all numerically significant subgroups also meet their respective growth targets is included. Results are given in terms of the DTXXS tables.

The Mini Glossary on the next page is a gesture of assistance in the task of keeping track of the various quantities.

Improvement--Mini Glossary

Individual Incrementation

Ik	Every student increases k percentile points on each test.
Pk	For grades 2-8: Each student increases k percentile points on Math and k-1 on the other 3 tests (Reading, Lang, Spell for gr 2-8). For grades 9-11: Each student increases k percentile points on Math and Reading and k-1 percentile points on the other 3 tests (Lang, Science, Social Science).

Incrementation to meet a growth Target

DT1I	The smallest value of k for which the school-wide API target--Target 1--is met using the "I" form of individual improvement.
DT1P	The smallest value of k for which the school-wide API target--Target 1--is met using the "P" form of individual improvement.
DT2I	The smallest value of k for which the doubled school-wide API target--Target 2--is met using the "I" form of individual improvement.
DT2P	The smallest value of k for which the doubled school-wide API target--Target 2--is met using the "P" form of individual improvement.
DT1IS	The smallest value of k for which both school and subgroup scores satisfy API target using the "I" form of individual improvement.
DT1PS	The smallest value of k for which both school and subgroup scores satisfy API target using the "P" form of individual improvement.
DT2IS	The smallest value of k for which both school and subgroup scores satisfy the doubled API target using the "I" form of individual improvement.
DT2PS	The smallest value of k for which both school and subgroup scores satisfy the doubled API target using the "P" form of individual improvement.

Improvement to Reach API Targets

For 4048 elementary schools with API <= 780

DT1I

DT1I	Count	CumCnt	Percent	CumPct
1	1387	1387	34.26	34.26
2	2209	3596	54.57	88.83
3	433	4029	10.70	99.53
4	17	4046	0.42	99.95
5	2	4048	0.05	100.00
N=	4048			

DT1P

DT1P	Count	CumCnt	Percent	CumPct
1	117	117	2.89	2.89
2	2443	2560	60.35	63.24
3	1323	3883	32.68	95.92
4	161	4044	3.98	99.90
5	3	4047	0.07	99.98
6	1	4048	0.02	100.00
N=	4048			

For 2413 elementary schools in Deciles 1-5

DT2I

DT2I	Count	CumCnt	Percent	CumPct
2	149	149	6.17	6.17
3	975	1124	40.41	46.58
4	733	1857	30.38	76.96
5	498	2355	20.64	97.60
6	51	2406	2.11	99.71
7	6	2412	0.25	99.96
8	1	2413	0.04	100.00
N=	2413			

DT2P

DT2P	Count	CumCnt	Percent	CumPct
3	472	472	19.56	19.56
4	1027	1499	42.56	62.12
5	614	2113	25.45	87.57
6	274	2387	11.36	98.92
7	25	2412	1.04	99.96
9	1	2413	0.04	100.00
N=	2413			

For 972 Middle Schools with API <= 780

DT1I

DT1I	Count	CumCnt	Percent	CumPct
1	206	206	21.19	21.19
2	721	927	74.18	95.37
3	42	969	4.32	99.69
4	3	972	0.31	100.00
N=	972			

DT1P

DT1P	Count	CumCnt	Percent	CumPct
1	41	41	4.22	4.22
2	535	576	55.04	59.26
3	382	958	39.30	98.56
4	14	972	1.44	100.00
N=	972			

For 557 Middle schools in Deciles 1-5

DT2I

DT2I	Count	CumCnt	Percent	CumPct
2	37	37	6.64	6.64
3	212	249	38.06	44.70
4	219	468	39.32	84.02
5	84	552	15.08	99.10
6	5	557	0.90	100.00
N=	557			

DT2P

DT2P	Count	CumCnt	Percent	CumPct
3	126	126	22.62	22.62
4	262	388	47.04	69.66
5	133	521	23.88	93.54
6	35	556	6.28	99.82
7	1	557	0.18	100.00
N=	557			

For 784 High Schools with API <= 780

DT1I	Count	CumCnt	Percent	CumPct
1	293	293	37.37	37.37
2	480	773	61.22	98.60
3	10	783	1.28	99.87
4	1	784	0.13	100.00
N=	784			

DT1P	Count	CumCnt	Percent	CumPct
1	36	36	4.59	4.59
2	542	578	69.13	73.72
3	204	782	26.02	99.74
4	2	784	0.26	100.00
N=	784			

For 413 High schools in Deciles 1-5

DT2I	Count	CumCnt	Percent	CumPct
2	27	27	6.54	6.54
3	185	212	44.79	51.33
4	182	394	44.07	95.40
5	18	412	4.36	99.76
6	1	413	0.24	100.00
N=	413			

DT2P	Count	CumCnt	Percent	CumPct
3	120	120	29.06	29.06
4	198	318	47.94	77.00
5	92	410	22.28	99.27
6	2	412	0.48	99.76
7	1	413	0.24	100.00
N=	413			

Cross Tabulation: All Elementary Schools
Distribution of DT1I values at each API decile
Rows: CARank Columns: DT1I

	1	2	3	4	5	All
1	0	133	326	17	2	478
	--	27.82	68.20	3.56	0.42	100.00
2	0	391	99	0	0	490
	--	79.80	20.20	--	--	100.00
3	4	467	6	0	0	477
	0.84	97.90	1.26	--	--	100.00
4	14	472	2	0	0	488
	2.87	96.72	0.41	--	--	100.00
5	61	419	0	0	0	480
	12.71	87.29	--	--	--	100.00
6	234	253	0	0	0	487
	48.05	51.95	--	--	--	100.00
7	416	69	0	0	0	485
	85.77	14.23	--	--	--	100.00
8	486	5	0	0	0	491
	98.98	1.02	--	--	--	100.00
9	480	0	0	0	0	480
	100.00	--	--	--	--	100.00
10	493	0	0	0	0	493
	100.00	--	--	--	--	100.00
All	2188	2209	433	17	2	4849
	45.12	45.56	8.93	0.35	0.04	100.00

Cell Contents --
Count
% of Row

Descriptive Statistics: API by DT1I All Elementary Schools

DT1I	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	2188	753.98	751.50	697.00	809.00	510.00	958.00
2	2209	552.53	554.00	499.00	603.50	349.00	750.00
3	433	423.01	424.00	397.00	448.00	333.00	548.00
4	17	355.24	349.00	335.00	364.50	311.00	444.00
5	2	308.50	308.50	*	*	302.00	315.00

Cross Tabulation: All Middle Schools
Distribution of DT1I values at each API decile
Rows: CARank Columns: DT1I

	1	2	3	4	All
1	0	65	42	3	110
	--	59.09	38.18	2.73	100.00
2	0	111	0	0	111
	--	100.00	--	--	100.00
3	0	110	0	0	110
	--	100.00	--	--	100.00
4	1	114	0	0	115
	0.87	99.13	--	--	100.00
5	4	107	0	0	111
	3.60	96.40	--	--	100.00
6	5	105	0	0	110
	4.55	95.45	--	--	100.00
7	21	90	0	0	111
	18.92	81.08	--	--	100.00
8	96	19	0	0	115
	83.48	16.52	--	--	100.00
9	110	0	0	0	110
	100.00	--	--	--	100.00
10	115	0	0	0	115
	100.00	--	--	--	100.00
All	352	721	42	3	1118
	31.48	64.49	3.76	0.27	100.00

Cell Contents --
Count
% of Row

Descriptive Statistics: API by DT1I All Middle Schools

DT1I	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	352	774.52	768.00	732.00	815.00	583.00	950.00
2	721	577.28	581.00	514.00	645.00	368.00	742.00
3	42	403.90	403.00	384.75	419.00	351.00	460.00
4	3	361.67	367.00	345.00	373.00	345.00	373.00

Cross Tabulation: All High Schools
Distribution of DT1I values at each API decile
Rows: CARank Columns: DT1I

	1	2	3	4	All
1	0	78	6	1	85
	--	91.76	7.06	1.18	100.00
2	3	80	1	0	84
	3.57	95.24	1.19	--	100.00
3	7	75	2	0	84
	8.33	89.29	2.38	--	100.00
4	5	76	1	0	82
	6.10	92.68	1.22	--	100.00
5	11	67	0	0	78
	14.10	85.90	--	--	100.00
6	21	68	0	0	89
	23.60	76.40	--	--	100.00
7	54	29	0	0	83
	65.06	34.94	--	--	100.00
8	78	6	0	0	84
	92.86	7.14	--	--	100.00
9	81	1	0	0	82
	98.78	1.22	--	--	100.00
10	86	0	0	0	86
	100.00	--	--	--	100.00
All	346	480	10	1	837
	41.34	57.35	1.19	0.12	100.00

Cell Contents -- Count
% of Row

Descriptive Statistics: API by DT1I All High Schools

DT1I	N	Mean	Median	Q1	Q3	Minimum	Maximum
1	346	716.06	710.00	673.75	759.25	503.00	966.00
2	480	555.38	564.00	499.25	609.75	355.00	729.00
3	10	460.9	415.0	400.8	537.0	386.0	580.0
4	1	297.00	297.00			297.00	297.00

Preliminary Year 2000 School-wide Data ELEMENTARY
Rows: 1999 API Decile; Columns: Met Targ1 (1), Did note meet Targ1 (0)

	0	1	All
1	81	394	475
	17.05	82.95	100.00
2	79	409	488
	16.19	83.81	100.00
3	63	413	476
	13.24	86.76	100.00
4	62	423	485
	12.78	87.22	100.00
5	52	424	476
	10.92	89.08	100.00
6	54	423	477
	11.32	88.68	100.00
7	44	434	478
	9.21	90.79	100.00
8	50	432	482
	10.37	89.63	100.00
9	42	433	475
	8.84	91.16	100.00
10	1	488	489
	0.20	99.80	100.00
All	528	4273	4801
	11.00	89.00	100.00

Rows: 1999 API Decile
Columns: Met Targ2 (1), Did note meet Targ2 (0)

	0	1	All
1	189	286	475
	39.79	60.21	100.00
2	161	327	488
	32.99	67.01	100.00
3	127	349	476
	26.68	73.32	100.00
4	112	373	485
	23.09	76.91	100.00
5	87	389	476
	18.28	81.72	100.00
All	676	1724	2400
	28.17	71.83	100.00

Cell Contents --Count
% of Row

Preliminary Year 2000 School-wide Data MIDDLE
Rows: 1999 API Decile; Columns: Met Targ1 (1), Did note meet Targ1 (0)

	0	1	All
1	45	64	109
	41.28	58.72	100.00
2	45	66	111
	40.54	59.46	100.00
3	39	70	109
	35.78	64.22	100.00
4	30	85	115
	26.09	73.91	100.00
5	25	85	110
	22.73	77.27	100.00
6	26	82	108
	24.07	75.93	100.00
7	31	79	110
	28.18	71.82	100.00
8	21	94	115
	18.26	81.74	100.00
9	21	88	109
	19.27	80.73	100.00
10	3	112	115
	2.61	97.39	100.00
All	286	825	1111
	25.74	74.26	100.00

Rows: 1999 API Decile
Columns: Met Targ2 (1), Did note meet Targ2 (0)

	0	1	All
1	79	30	109
	72.48	27.52	100.00
2	72	39	111
	64.86	35.14	100.00
3	60	49	109
	55.05	44.95	100.00
4	53	62	115
	46.09	53.91	100.00
5	45	65	110
	40.91	59.09	100.00
All	309	245	554
	55.78	44.22	100.00

Cell Contents --Count
% of Row

Preliminary Year 2000 School-wide Data HIGH
Rows: 1999 API Decile; Columns: Met Targ1 (1), Did note meet Targ1 (0)

	0	1	All
1	45	35	80
	56.25	43.75	100.00
2	47	34	81
	58.02	41.98	100.00
3	36	44	80
	45.00	55.00	100.00
4	27	55	82
	32.93	67.07	100.00
5	33	43	76
	43.42	56.58	100.00
6	38	48	86
	44.19	55.81	100.00
7	29	53	82
	35.37	64.63	100.00
8	37	47	84
	44.05	55.95	100.00
9	34	47	81
	41.98	58.02	100.00
10	22	64	86
	25.58	74.42	100.00
All	348	470	818
	42.54	57.46	100.00

Rows: 1999 API Decile
Columns: Met Targ2 (1), Did note meet Targ2 (0)

	0	1	All
1	63	17	80
	78.75	21.25	100.00
2	68	13	81
	83.95	16.05	100.00
3	58	22	80
	72.50	27.50	100.00
4	44	38	82
	53.66	46.34	100.00
5	46	30	76
	60.53	39.47	100.00
All	279	120	399
	69.92	30.08	100.00

Cell Contents --Count
% of Row

Growth Targets and Subgroups Criteria

Because for the Award Programs the respective growth targets for numerically significant subgroups must also be met, it's useful to extend the DT calculations to the criteria of meeting the relevant growth target for school score plus subgroups. A series of tables for Elementary, Middle, and High Schools show the attrition of the number of schools whose school-wide scores meet a growth target at a certain level of score incrementation, but require a larger incrementation to have all numerically significant subgroups also meet their targets. The tables are a cross tabulation between the previously shown DTXX scores and the DTXXS scores, which are the amount of incrementation (under I or P) required for both school and subgroup scores to satisfy the relevant growth targets.

A small further complication is that 18 Elementary schools have transposed/mislabeled ethnicity indicators on the Harcourt individual data-base (the published API reports have been corrected) so that for convenience those schools were set aside in the sub-group tables. Therefore the group of elementary schools with API <= 780 is reduced from 4048 to 4030 schools. And the group of elementary schools with API in deciles 1-5 is reduced from 2413 to 2403 schools. Furthermore, two Middle Schools have mislabeled ethnicity and are set aside in the subgroup growth target cross-tabulations.

Take the example of High Schools and use the "I" incrementation. For schools with API <= 780, all numerically significant subgroups also meet their corresponding growth target for 95% of the schools with DT1I = 1, for 99% of the schools with DT1I = 2, and for all the schools with DT1I = 3,4.

ELEMENTARY SCHOOLS
Subgroup Criteria: Integer Incrementation
Tabulated Statistics: DT1I, DT1IS API <= 780
Rows: DT1I Columns: DT1IS

	1	2	3	4	5	All
1	1243	138	1	0	0	1382
	89.94	9.99	0.07	--	--	100.00
2	0	2143	54	0	0	2197
	--	97.54	2.46	--	--	100.00
3	0	0	428	4	0	432
	--	--	99.07	0.93	--	100.00
4	0	0	0	17	0	17
	--	--	--	100.00	--	100.00
5	0	0	0	0	2	2
	--	--	--	--	100.00	100.00
All	1243	2281	483	21	2	4030
	30.84	56.60	11.99	0.52	0.05	100.00

Cell Contents -- Count
% of Row

Subgroup Criteria: Partial Incrementation
Tabulated Statistics: DT1P, DT1PS API <= 780
Rows: DT1P Columns: DT1PS

	1	2	3	4	5	6	All
1	89	28	0	0	0	0	117
	76.07	23.93	--	--	--	--	100.00
2	0	2311	117	2	0	0	2430
	--	95.10	4.81	0.08	--	--	100.00
3	0	0	1290	28	0	0	1318
	--	--	97.88	2.12	--	--	100.00
4	0	0	0	159	2	0	161
	--	--	--	98.76	1.24	--	100.00
5	0	0	0	0	3	0	3
	--	--	--	--	100.00	--	100.00
6	0	0	0	0	0	1	1
	--	--	--	--	--	100.00	100.00
All	89	2339	1407	189	5	1	4030
	2.21	58.04	34.91	4.69	0.12	0.02	100.00

Cell Contents -- Count
% of Row

ELEMENTARY SCHOOLS in Deciles 1-5 Doubled Growth Target
Subgroup Criteria: Integer Incrementation
Tabulated Statistics: Rows: DT2I Columns: DT2IS

	2	3	4	5	6	7	8	All
2	133	16	0	0	0	0	0	149
	89.26	10.74	--	--	--	--	--	100.00
3	0	928	36	4	0	0	0	968
	--	95.87	3.72	0.41	--	--	--	100.00
4	0	0	718	13	1	0	0	732
	--	--	98.09	1.78	0.14	--	--	100.00
5	0	0	0	492	4	0	0	496
	--	--	--	99.19	0.81	--	--	100.00
6	0	0	0	0	51	0	0	51
	--	--	--	--	100.00	--	--	100.00
7	0	0	0	0	0	6	0	6
	--	--	--	--	--	100.00	--	100.00
8	0	0	0	0	0	0	1	1
	--	--	--	--	--	--	100.00	100.00
All	133	944	754	509	56	6	1	2403
	5.53	39.28	31.38	21.18	2.33	0.25	0.04	100.00

Cell Contents -- Count % of Row

Subgroup Criteria: Partial Incrementation
Tabulated Statistics: Rows:DT2P Columns: DT2PS

	3	4	5	6	7	9	All
3	436	31	1	0	0	0	468
	93.16	6.62	0.21	--	--	--	100.00
4	0	990	29	4	0	0	1023
	--	96.77	2.83	0.39	--	--	100.00
5	0	0	608	5	0	0	613
	--	--	99.18	0.82	--	--	100.00
6	0	0	0	273	0	0	273
	--	--	--	100.00	--	--	100.00
7	0	0	0	0	25	0	25
	--	--	--	--	100.00	--	100.00
9	0	0	0	0	0	1	1
	--	--	--	--	--	100.00	100.00
All	436	1021	638	282	25	1	2403
	18.14	42.49	26.55	11.74	1.04	0.04	100.00

MIDDLE SCHOOLS
Subgroup Criteria: Integer Incrementation
Tabulated Statistics: DT1I, DT1IS API <= 780
Rows: DT1I Columns: DT1IS

	1	2	3	4	All
1	191	15	0	0	206
	92.72	7.28	--	--	100.00
2	0	712	6	1	719
	--	99.03	0.83	0.14	100.00
3	0	0	41	1	42
	--	--	97.62	2.38	100.00
4	0	0	0	3	3
	--	--	--	100.00	100.00
All	191	727	47	5	970
	19.69	74.95	4.85	0.52	100.00

Cell Contents -- Count
% of Row

Subgroup Criteria: Partial Incrementation
Tabulated Statistics: DT1P, DT1PS API <= 780
Rows: DT1P Columns: DT1PS

	1	2	3	4	All
1	31	10	0	0	41
	75.61	24.39	--	--	100.00
2	0	497	37	0	534
	--	93.07	6.93	--	100.00
3	0	0	377	4	381
	--	--	98.95	1.05	100.00
4	0	0	0	14	14
	--	--	--	100.00	100.00
All	31	507	414	18	970
	3.20	52.27	42.68	1.86	100.00

Cell Contents -- Count
% of Row

MIDDLE SCHOOLS in Deciles 1-5 Doubled Growth Target
Subgroup Criteria: Integer Incrementation
Tabulated Statistics: Rows: DT2I Columns: DT2IS

	2	3	4	5	6	All
2	32	5	0	0	0	37
	86.49	13.51	--	--	--	100.00
3	0	206	4	0	0	210
	--	98.10	1.90	--	--	100.00
4	0	0	216	3	0	219
	--	--	98.63	1.37	--	100.00
5	0	0	0	84	0	84
	--	--	--	100.00	--	100.00
6	0	0	0	0	5	5
	--	--	--	--	100.00	100.00
All	32	211	220	87	5	555
	5.77	38.02	39.64	15.68	0.90	100.00

Cell Contents -- Count
% of Row

Subgroup Criteria: Partial Incrementation
Tabulated Statistics: Rows:DT2P Columns: DT2PS

	3	4	5	6	7	All
3	113	12	0	0	0	125
	90.40	9.60	--	--	--	100.00
4	0	252	7	2	0	261
	--	96.55	2.68	0.77	--	100.00
5	0	0	132	1	0	133
	--	--	99.25	0.75	--	100.00
6	0	0	0	35	0	35
	--	--	--	100.00	--	100.00
7	0	0	0	0	1	1
	--	--	--	--	100.00	100.00
All	113	264	139	38	1	555
	20.36	47.57	25.05	6.85	0.18	100.00

Cell Contents -- Count
% of Row

HIGH SCHOOLS
Subgroup Criteria: Integer Incrementation
Tabulated Statistics: DT1I, DT1IS API <= 780
Rows: DT1I Columns: DT1IS

	1	2	3	5	All
1	279	14	0	0	293
	95.22	4.78	--	--	100.00
2	0	479	1	0	480
	--	99.79	0.21	--	100.00
3	0	0	10	0	10
	--	--	100.00	--	100.00
4	0	0	0	1	1
	--	--	--	100.00	100.00
All	279	493	11	1	784
	35.59	62.88	1.40	0.13	100.00

Cell Contents -- Count
% of Row

Subgroup Criteria: Partial Incrementation
Tabulated Statistics: DT1P, DT1PS API <= 780
Rows: DT1P Columns: DT1PS

	1	2	3	4	5	All
1	29	7	0	0	0	36
	80.56	19.44	--	--	--	100.00
2	0	526	16	0	0	542
	--	97.05	2.95	--	--	100.00
3	0	0	204	0	0	204
	--	--	100.00	--	--	100.00
4	0	0	0	1	1	2
	--	--	--	50.00	50.00	100.00
All	29	533	220	1	1	784
	3.70	67.98	28.06	0.13	0.13	100.00

Cell Contents -- Count
% of Row

HIGH SCHOOLS in Deciles 1-5 Doubled Growth Target
Subgroup Criteria: Integer Incrementation
Tabulated Statistics: Rows: DT2I Columns: DT2IS

	2	3	4	5	6	All
2	23	4	0	0	0	27
	85.19	14.81	--	--	--	100.00
3	0	182	3	0	0	185
	--	98.38	1.62	--	--	100.00
4	0	0	182	0	0	182
	--	--	100.00	--	--	100.00
5	0	0	0	18	0	18
	--	--	--	100.00	--	100.00
6	0	0	0	0	1	1
	--	--	--	--	100.00	100.00
All	23	186	185	18	1	413
	5.57	45.04	44.79	4.36	0.24	100.00

Cell Contents -- Count
% of Row

Subgroup Criteria: Partial Incrementation
Tabulated Statistics: Rows:DT2P Columns: DT2PS

	3	4	5	6	7	All
3	110	10	0	0	0	120
	91.67	8.33	--	--	--	100.00
4	0	195	3	0	0	198
	--	98.48	1.52	--	--	100.00
5	0	0	92	0	0	92
	--	--	100.00	--	--	100.00
6	0	0	0	2	0	2
	--	--	--	100.00	--	100.00
7	0	0	0	0	1	1
	--	--	--	--	100.00	100.00
All	110	205	95	2	1	413
	26.63	49.64	23.00	0.48	0.24	100.00

Cell Contents -- Count
% of Row

Improvement in PAC50

To link with first section on correspondences between API and the PAC50 composite measure, it's useful to examine the effect of individual improvement on the PAC50 score. The 1999 PAC50 score is indicated by the 0 row in the tables below. In each row is shown the mean and median PAC50. The left table is for all schools, and the right table is for the subset of schools in state decile 5 on the school-wide API.

As one would roughly expect from the nature of a PAC score, one percentile point of student improvement translates into approximately 1 point of improvement in the PAC50 measure. The decile 5 subset comes closer to this correspondence because there highest deciles schools improve less on the PAC50 measure.

A small attempt at transitivity: for the full set of schools the improvement in the API seen above (about 8 points for each percentile point of student improvement) and the improvement in PAC50 below (about .01 for each percentile point of student improvement) match with the correspondence between API and the PAC50 measure in the very first section (each .01 in PAC50 corresponds to almost 7 points on the API scale).

PAC50 for 4849 elementary schools

Individual Improvement	Median	Mean
0	0.45514	0.46811
1	0.46777	0.47931
2	0.47662	0.48656
4	0.49127	0.50046
10	0.55505	0.55493

PAC50 for 480 elementary schools, CARank=5

Individual Improvement	Median	Mean
0	0.42117	0.42213
1	0.43469	0.43445
2	0.44098	0.44252
4	0.45657	0.45796
10	0.51898	0.51997

PAC50 for 1118 Middle Schools

Individual Improvement	Median	Mean
0	0.45425	0.46291
1	0.46048	0.46734
2	0.47186	0.47607
4	0.49606	0.49804
10	0.55865	0.55298

PAC50 for 111 Middle schools, CARank=5

Individual Improvement	Median	Mean
0	0.42572	0.42622
1	0.43127	0.43086
2	0.44043	0.44071
4	0.46375	0.46523
10	0.52649	0.52656

PAC50 for 837 High Schools

Individual Improvement	Median	Mean
0	0.44739	0.45254
1	0.44794	0.45355
2	0.45746	0.46236
4	0.47528	0.47941
10	0.52966	0.53018

PAC50 for 78 High schools, CARank=5

Individual Improvement	Median	Mean
0	0.42529	0.42376
1	0.42551	0.42483
2	0.43628	0.43432
4	0.45486	0.45279
10	0.50745	0.50746

C.

Augmented Presentation:
Demographic Characteristics (SCI etc) and API scores

Part I. School-level data

For reference, start with descriptive statistics for the SCI index:

Descriptive Statistics: SCI

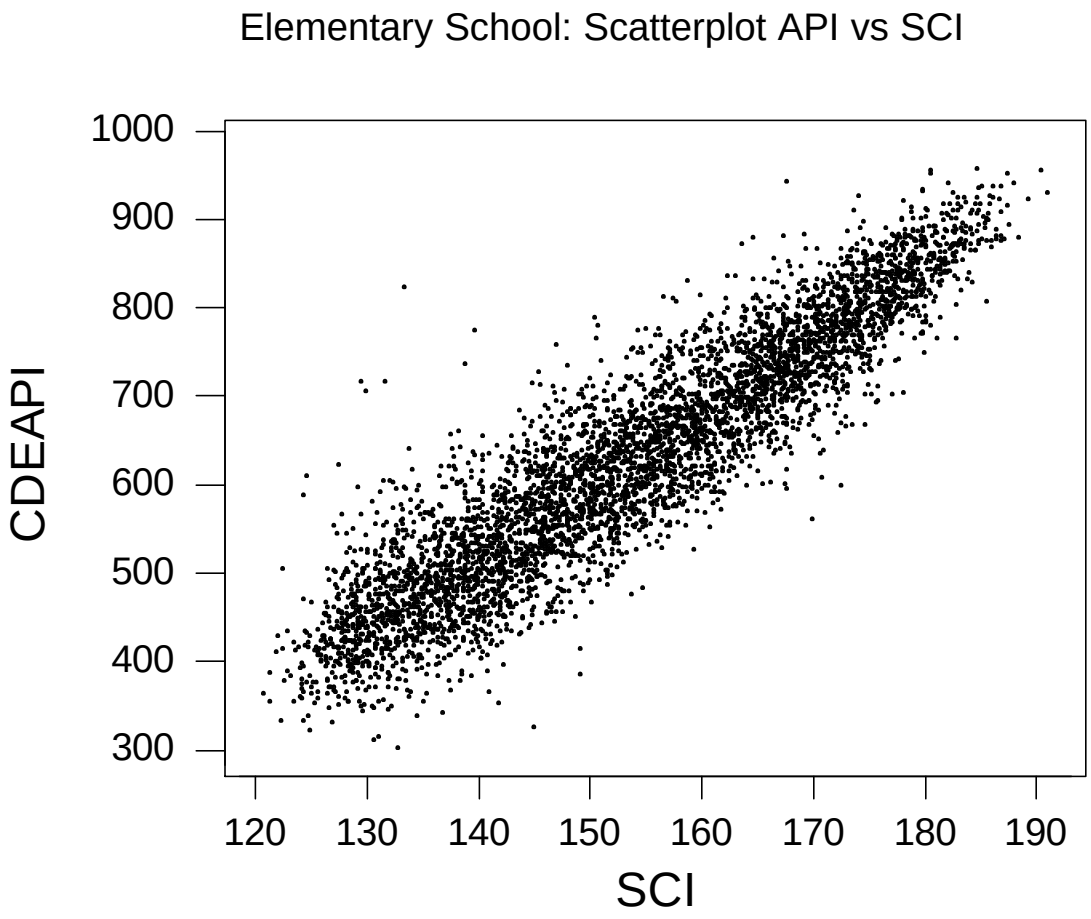
SCI	N	Mean	Median	Q1	Q3	Minimum	Maximum
Elem	4849	153.87	153.60	140.76	166.85	120.58	191.04
Middle	1118	154.01	154.76	142.70	165.14	116.67	190.88
High	837	152.64	153.27	143.79	161.11	120.85	185.26

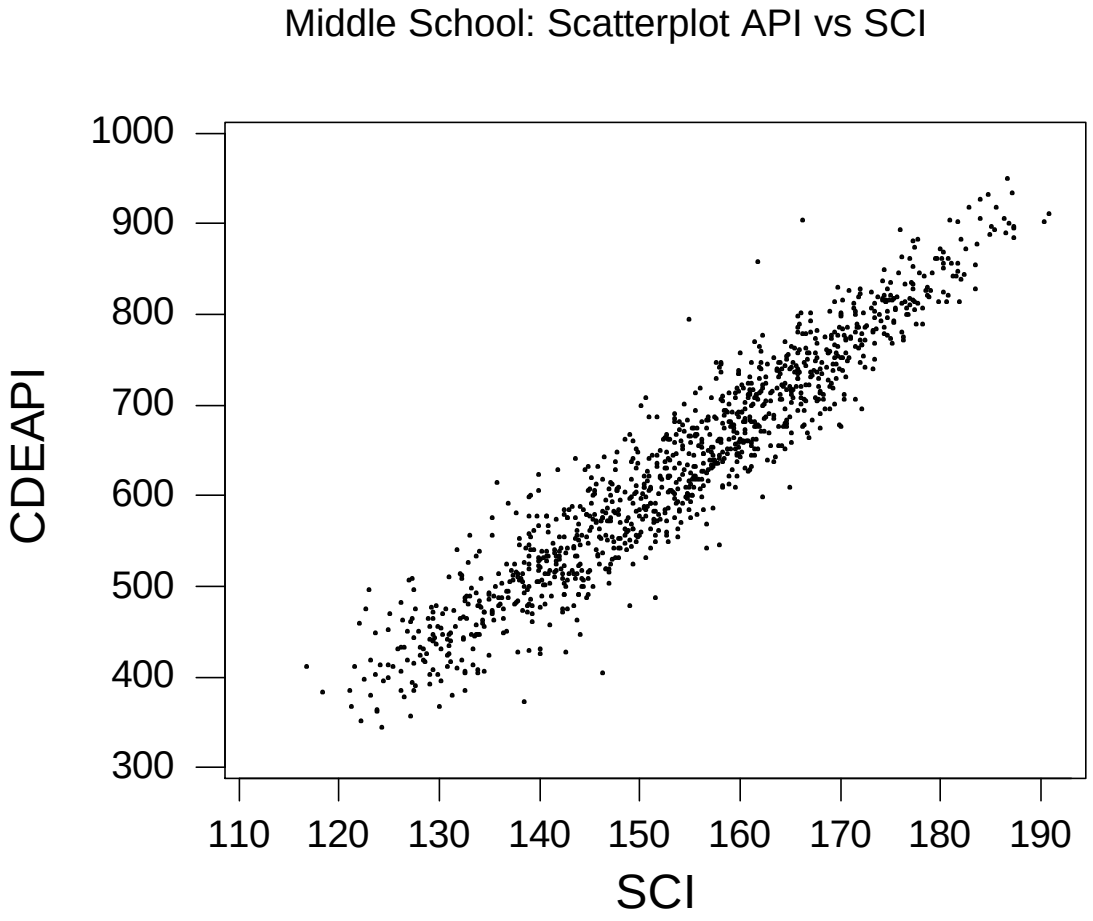
To examine the relation of SCI and API, one common first look is through the correlation coefficients:

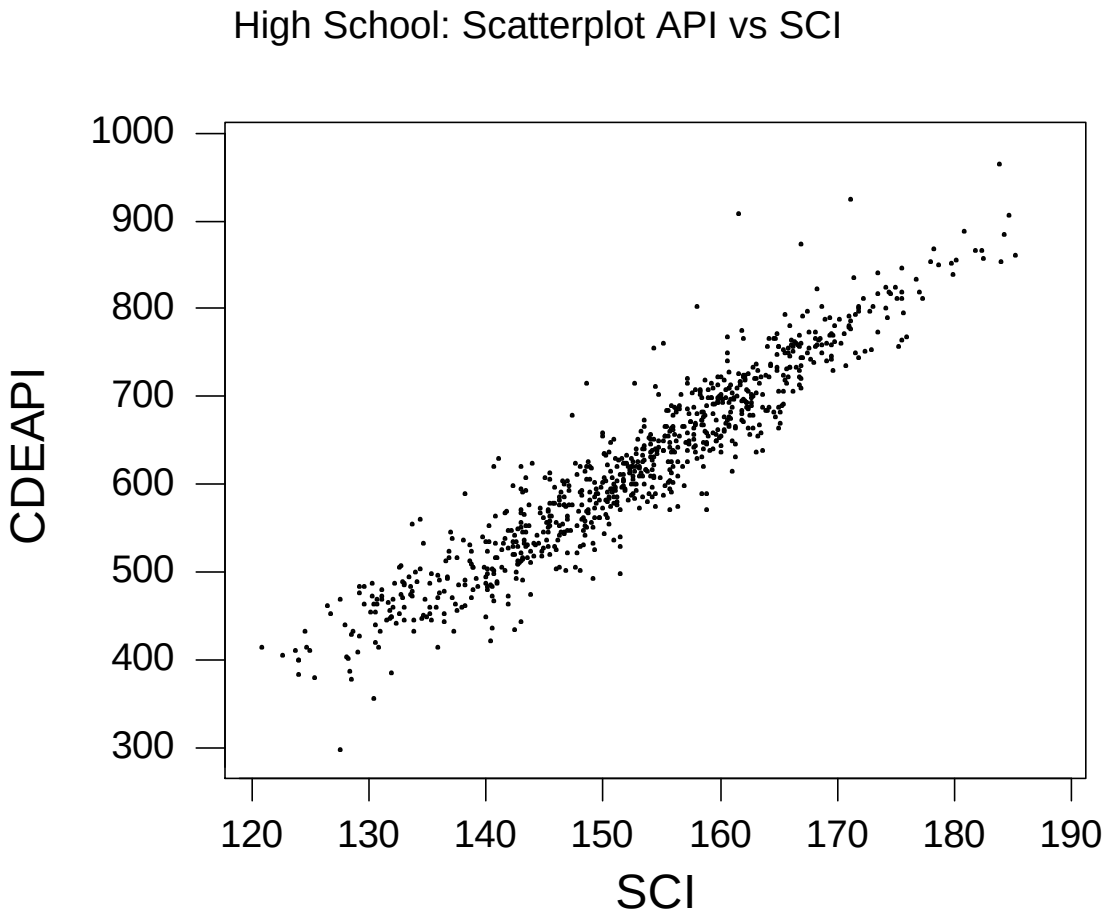
	Elem	Middle	High
Pearson correlation of SCI and API =	0.924	0.951	0.946

Many would regard these correlations as quite large. A more detailed look is provided by the scatterplots of API vs SCI on the following 3 pages. Even though API scores increase as the SCI index increases, the plots also show considerable range on API (perhaps 300 pts) for a chosen level of SCI.

Another form of the same view provided by the API vs SCI scatterplots are the decile by decile tables on the pages following the scatterplots. The API reporting uses state deciles for the school API score; these tables extend that format by also using the decile for each school's SCI index and then cross-tabulating. The tables can be thought of as the result of placing a 10x10 grid on each scatterplot and then counting the points within. In each table below, the rows are the decile on the SCI (DecSCI) and the columns are the decile on the API score (CARnk). These tables make it easy to pick out examples of schools (e.g. Elementary) with rather low SCI but relatively strong API (those same schools will have a very high Similar Schools decile).


Elementary School: Scatterplot API vs SCI
CDEAPI
1000
900
800
700
600
500
400
300
120
130
140
150
160
170
180
190
SCI


Middle School: Scatterplot API vs SCI
CDEAPI
1000
900
800
700
600
500
400
300
110
120
130
140
150
160
170
180
190
SCI


High School: Scatterplot API vs SCI
CDEAPI
1000
900
800
700
600
500
400
300
120
130
140
150
160
170
180
190
SCI

Tabulated Statistics: DecSCI, CARnk
Elementary Schools
Rows: DecSCI Columns: CARnk

	1	2	3	4	5	6	7	8	9	10
1	288	126	47	13	8	0	1	2	0	0
2	132	174	109	48	16	5	0	0	0	1
3	49	130	157	92	41	15	0	1	1	0
4	7	48	111	147	97	51	20	4	0	0
5	2	10	46	122	138	109	47	8	3	0
6	0	2	6	58	114	146	105	43	11	1
7	0	0	1	7	58	117	153	109	36	3
8	0	0	0	0	6	35	119	195	105	24
9	0	0	0	1	2	9	35	122	215	101
10	0	0	0	0	0	0	5	7	109	363
All	478	490	477	488	480	487	485	491	480	493

Tabulated Statistics: DecSCI, CARnk
Middle Schools
Rows: DecSCI Columns: CARnk

	1	2	3	4	5	6	7	8	9	10
1	80	27	3	1	0	0	0	0	0	0
2	24	51	23	9	5	0	0	0	0	0
3	5	29	47	24	6	1	0	0	0	0
4	1	3	30	41	24	11	2	0	0	0
5	0	1	5	33	38	22	12	1	0	0
6	0	0	2	7	29	39	23	9	3	0
7	0	0	0	0	8	28	38	30	7	1
8	0	0	0	0	1	9	25	48	26	3
9	0	0	0	0	0	0	11	27	57	17
10	0	0	0	0	0	0	0	0	17	94
All	110	111	110	115	111	110	111	115	110	115

Tabulated Statistics: DecSCI, CARnk
High Schools
Rows: DecSCI Columns: CARnk

	1	2	3	4	5	6	7	8	9	10
1	63	18	3	0	0	0	0	0	0	0
2	19	39	17	4	1	2	0	0	0	0
3	3	20	37	15	7	2	0	0	0	0
4	0	6	22	30	15	7	3	0	1	0
5	0	1	5	20	32	22	2	0	1	0
6	0	0	0	9	20	28	19	6	1	1
7	0	0	0	4	2	22	28	23	4	1
8	0	0	0	0	1	4	22	38	15	4
9	0	0	0	0	0	2	9	17	42	14
10	0	0	0	0	0	0	0	0	18	66
All	85	84	84	82	78	89	83	84	82	86

The range of scores for similar schools--RangeSimSAPI

RangeSimSAPI was defined and introduced in First Pass. Each school has associated with it a list of 100 similar schools (closest neighbors on the SCI index). For those 100 'similar' schools how similar are their API scores? Specifically, obtain the range of the corresponding 100 API scores (maxAPI - minAPI). That's the "RangeSimSAPI".

The table below adds Middle and High Schools to the Elementary Schools presentation in First Pass.

Descriptive Statistics: RangeSimSAPI

Variable	N	Mean	Median	Q1	Q3	Minimum	Maximum
Elem	4849	281.50	277.00	243.00	304.00	154.00	522.00
Middle	1118	227.28	230.00	199.00	253.00	149.00	308.00
High	837	234.53	231.00	209.00	256.00	152.00	338.00

The discussion in First Pass noted that half the Elementary Schools show a range of their Similar Schools API scores of at least 277 points which corresponded to width of at least 6 statewide deciles, and 75 percent of elementary schools have a range of their Similar Schools API scores of at least 243 points which corresponds to a width of at least 5 statewide deciles.

Half of Middle Schools have a range of their Similar Schools API scores of at least 230 points which corresponds to 5-6 deciles (Middle School deciles are slightly narrower as shown in the first section of Lots More). Seventy-five percent of Middle Schools have a range of their Similar Schools API scores of at least 199 points which corresponds to a width of 5 deciles.

Half of High Schools have a range of their Similar Schools API scores of at least 231 points which corresponds to width of 7-8 deciles (High School deciles are narrower still as shown in the first section of Lots More). Seventy-five percent of High Schools have a range of their Similar Schools API scores of at least 209 points which corresponds to a width of 7 deciles.

The following tables extend the presentation in First Pass by adding Middle and High Schools. The tables breaks down the RangeSimSAPI for each State Decile. The tables show that indications from the entire state data also hold up when examined for each decile.

For example, there are 85 High Schools placed in the first (lowest) state decile on API scores. Half of those schools have RangeSimSAPI of at least 263 points, which represents a width of 8 state deciles (based on median decile width of 31 points for high schools). Another way of calibrating would be to add 263 points to the score at the top of the first (lowest) decile 475; that sum 738 is fall midway in the ninth decile. Seventy-five percent of those high schools in the lowest decile have RangeSimSAPI of over 216 points (a width corresponding to about 7 deciles).

Descriptive Statistics: RangeSimSAPI by CARnk

RangeSimSAPI for all Elementary Schools at each State Decile

		RangeSimSAPI						
CA	Decile	N	Mean	Median	Q1	Q3	Minimum	Maximum
	1	478	326.24	294.00	279.75	374.00	209.00	522.00
	2	490	322.36	301.00	276.00	374.00	209.00	522.00
	3	477	307.44	290.00	260.50	354.00	200.00	522.00
	4	488	295.78	286.00	253.00	317.00	205.00	522.00
	5	480	284.57	279.00	249.00	303.75	198.00	522.00
	6	487	271.97	272.00	247.00	292.00	203.00	464.00
	7	485	270.79	265.00	246.00	288.00	181.00	407.00
	8	491	270.81	265.00	243.00	290.00	182.00	389.00
	9	480	252.38	258.00	217.00	280.00	154.00	349.00
	10	493	214.22	208.00	192.00	220.00	165.00	349.00

RangeSimSAPI for all Middle Schools at each State Decile

		RangeSimSAPI						
CA	Decile	N	Mean	Median	Q1	Q3	Minimum	Maximum
	1	110	210.09	197.00	195.00	235.00	188.00	256.00
	2	111	231.23	241.00	215.00	250.00	177.00	263.00
	3	110	237.80	239.00	216.00	256.00	188.00	295.00
	4	115	239.46	239.00	222.00	253.00	203.00	308.00
	5	111	242.69	245.00	230.00	253.00	206.00	308.00
	6	110	233.17	230.00	206.00	253.00	149.00	308.00
	7	111	241.95	250.00	212.00	261.00	149.00	308.00
	8	115	241.95	261.00	212.00	261.00	149.00	306.00
	9	110	211.90	198.00	172.00	249.75	155.00	306.00
	10	115	183.03	181.00	176.00	181.00	154.00	294.00

RangeSimSAPI for all High Schools at each State Decile

		RangeSimSAPI						
CA	Decile	N	Mean	Median	Q1	Q3	Minimum	Maximum
	1	85	243.54	263.00	216.00	263.00	190.00	263.00
	2	84	219.33	216.00	209.00	222.00	186.00	292.00
	3	84	212.52	209.00	205.00	222.00	181.00	241.00
	4	82	217.29	222.00	205.00	222.00	186.00	263.00
	5	78	216.74	218.00	194.50	222.00	166.00	278.00
	6	89	225.07	222.00	204.00	232.00	186.00	338.00
	7	83	248.88	232.00	231.00	294.00	157.00	338.00
	8	84	262.65	261.00	231.00	294.00	157.00	338.00
	9	82	251.77	256.00	235.00	274.25	157.00	338.00
	10	86	246.59	256.00	237.25	256.00	152.00	338.00

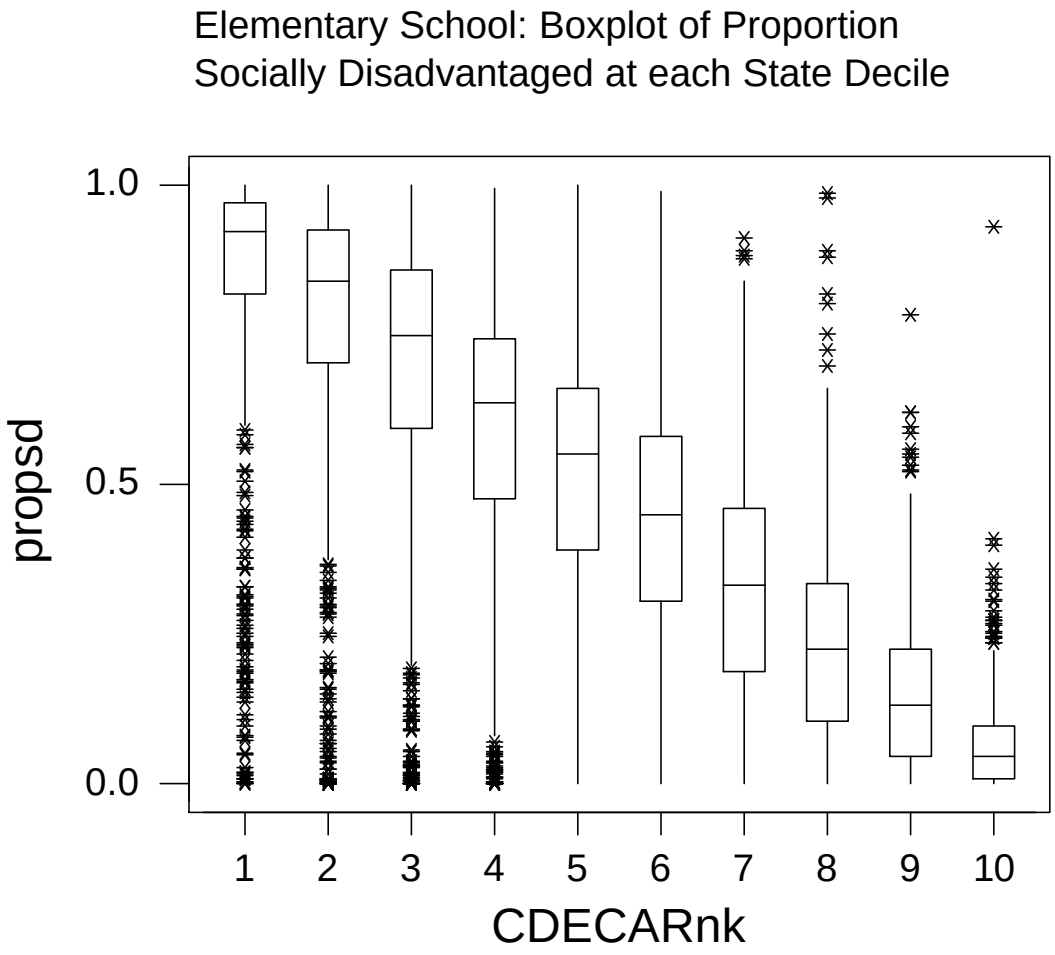
Proportion Socially Disadvantaged.

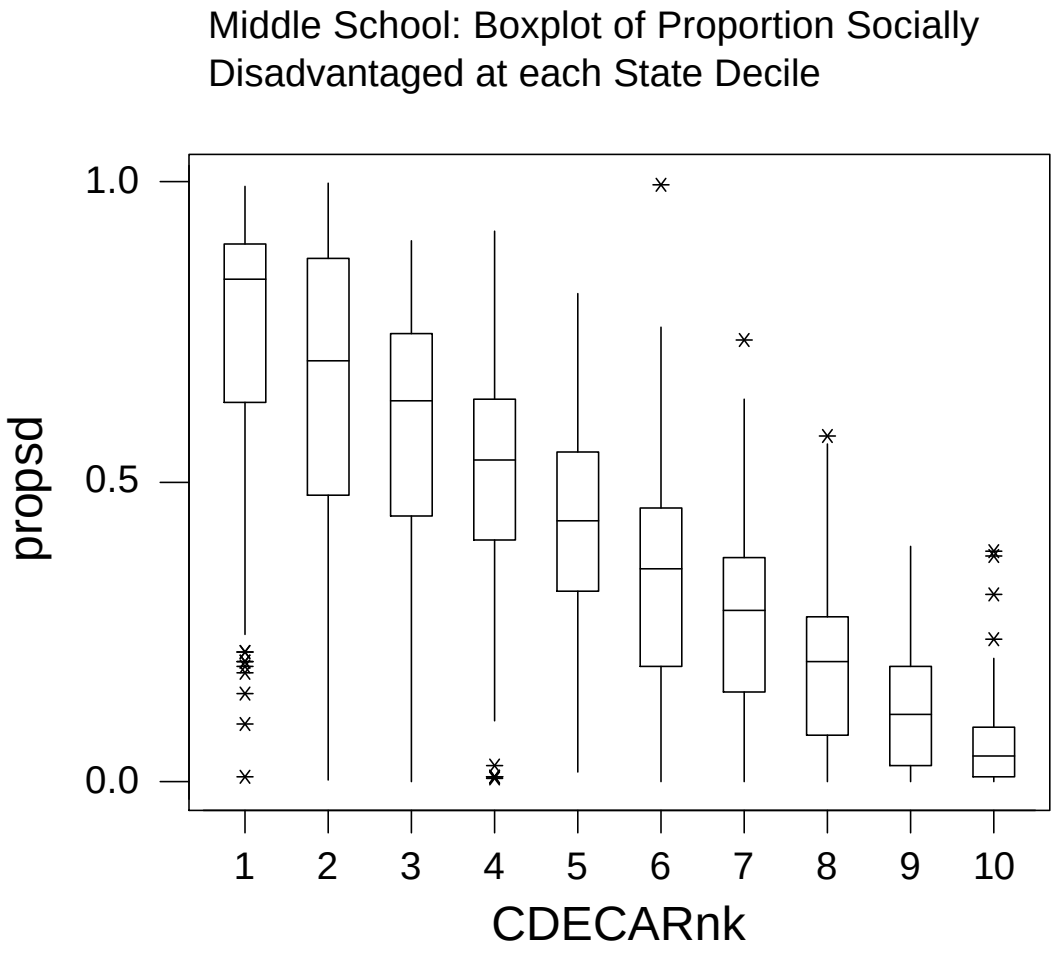
Another demographic measure is the proportion of students in a school who are classified as Socially Disadvantaged in the API reports. The table below presents descriptive statistics for propSD (number of "Socioeconomically Disadvantage Tested" divided by "Number of Valid Tests" from the API research files).

Descriptive Statistics: propSD

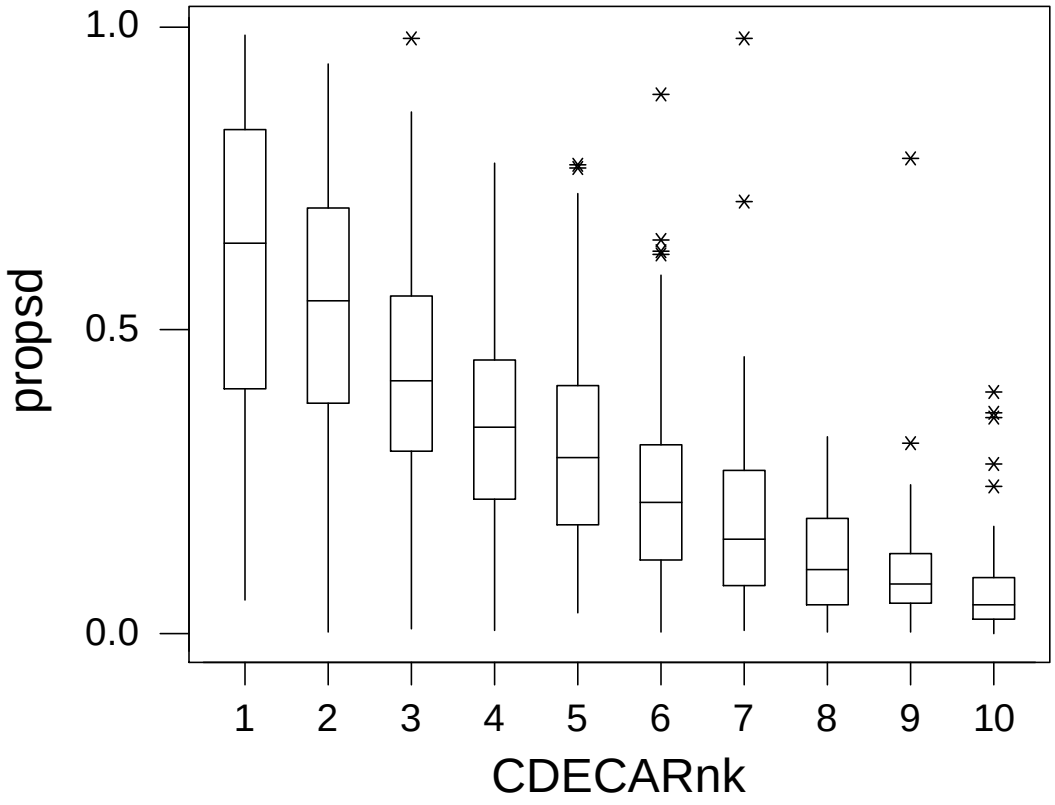
propSD	N	Mean	Median	Q1	Q3	Minimum	Maximum
Elem	4849	0.45228	0.43307	0.13752	0.74702	0.00000	1.00000
Middle	1118	0.38337	0.34803	0.12148	0.61958	0.00000	0.99893
High	837	0.29546	0.24138	0.12148	0.61958	0.00000	0.99893

Another look at the demographic characteristics and the API scores is provided by the following series of boxplots. For each API decile ("Statewide Rank" labeled as CDECARnk) a boxplot of the proportion Socially Disadvantaged is shown. These plots show that schools in the lower deciles tend to have high proportions of students meeting the reporting criteria for Socially Disadvantaged. These boxplots serve to provide some balance to the message of the RangeSimSAPI analyses. There's no claim here that school-level demographic factors are unrelated to school-level academic performance. However, it does seem that this relationship is sometimes overstated.


Elementary School: Boxplot of Proportion
Socially Disadvantaged at each State Decile
propsd
1.0
0.5
0.0
1
2
3
4
5
6
7
8
9
10
CDECARnk


Middle School: Boxplot of Proportion Socially Disadvantaged at each State Decile
propsd
1.0
0.5
0.0
1
2
3
4
5
6
7
8
9
10
CDECARnk

High School: Boxplot of Proportion Socially Disadvantaged at each State Decile



Part II: Individual-level data

The considerable problems in describing individual processes (e.g. student academic achievement) using group (e.g. school-level data) are well-documented in every area of social science. Thus the attempt here to provide some individual-level descriptive data.

An academic performance score for each individual is constructed by considering each student to be a school of size 1. For an elementary student with complete data on all four tests the measure is obtained by taking the quintile scores (the weighting factors in the API documentation), and then apply the content weights to obtain a score in the 200-1000 metric. For example, an elementary student scoring at the national 50th percentile on each of the four tests would have a score of 700. To be explicit, use the transformation for each content area:

Percentile Rank	1-19	20-39	40-59	60-79	80-99
API weighting factor	200	500	700	875	1000

and then use the content area weights to form the average score for the individual. For students with data on all four tests this measure is called APIind. For students with missing data on at least one, but no more than three tests a second individual measure, APIindR, is constructed as follows: form the weighted sum for the non-missing content areas and then rescale by dividing by the sum of the content weights for the non-missing data. For example, if a student had scores on Reading, Language, and Spelling, but a missing score on Math, the APIindR score would be the weighted sum for the 3 non-missing tests divided by .6, the sum of the non-missing content weights. For that student the APIind score would be missing. Statewide summaries for these two measures (elementary school students included in 1999 API school scores) are:

Variable	N	N*	Mean	Median	Q1	Q3
APIindR	1814112	0	617.66	640.00	365.00	867.50
APIind	1713154	100958	628.59	665.00	395.00	875.00

The first tables use Parental Educational Level, defined as the educational level of the most educated parent:

1. Not a high school graduate
2. High school graduate
3. Some college
4. College graduate
5. Graduate school/post graduate training

In 1999 Parent Education responses, there were 525759 responses missing and 1290 responses double-punched that were not included in the tables below. (Mean API scores for students with missing Parent Education response were 584 and 597.)

The tables below illustrate two clear facts which need to be balanced in forming interpretations. Certainly, the individual achievement does increase with increasing reported parental education level. But, even for students having neither parent a high school graduate, a considerable proportion show good academic performance (e.g., nearly a quarter of those students score above the state mean).

Elementary Individual API's by ParentED: APIind

Quantile	ParentEd=1	ParentEd=2	ParentEd=3	ParentEd=4	ParentEd=5
100% Max	1000.00	1000.00	1000.00	1000	1000.00
99%	981.25	1000.00	1000.00	1000	1000.00
95%	886.25	962.50	1000.00	1000	1000.00
90%	796.25	917.50	962.50	1000	1000.00
75% Q3	620.00	792.50	893.75	950	981.25
50% Median	410.00	586.25	736.25	835	917.50
25% Q1	245.00	365.00	515.00	625	766.25
10%	200.00	200.00	320.00	395	535.00
5%	200.00	200.00	200.00	245	380.00
1%	200.00	200.00	200.00	200	200.00
0% Min	200.00	200.00	200.00	200	200.00
	n=236972	n=338883	n=273150	n=257724	n=115834

Elementary Individual API's by ParentED: APIindR

Quantile	ParentEd=1	ParentEd=2	ParentEd=3	ParentEd=4	ParentEd=5
100% Max	1000.00	1000.00	1000.00	1000.00	1000.00
99%	981.25	1000.00	1000.00	1000.00	1000.00
95%	875.00	962.50	1000.00	1000.00	1000.00
90%	792.50	912.50	962.50	1000.00	1000.00
75% Q3	610.00	781.25	893.75	950.00	981.25
50% Median	400.00	567.50	726.25	823.75	917.50
25% Q1	200.00	335.00	500.00	616.25	757.14
10%	200.00	200.00	290.00	371.43	530.00
5%	200.00	200.00	200.00	245.00	365.00
1%	200.00	200.00	200.00	200.00	200.00
0% Min	200.00	200.00	200.00	200.00	200.00
	n=257935	n=360245	n=284744	n=265612	n=118527

A second, somewhat redundant table, uses the individual student's classification into the Socially Disadvantaged subgroup. Clearly, there is a large difference between the distribution of scores for the Socially Disadvantaged subgroup and those who are not in that subgroup. But, also, more than a quarter of the students classified as Socially Disadvantaged have scores above 700 on either measure. A further analysis might investigate school membership (e.g. their school's API decile) associations for those students.

Elementary Individual API's by Socially Disadvantaged or not

SocDis=N		SocDis=Y	
Quantile	APIind	Quantile	APIind
100% Max	1000.00	100% Max	1000.00
99%	1000.00	99%	1000.00
95%	1000.00	95%	943.75
90%	1000.00	90%	875.00
75% Q3	936.25	75% Q3	715.00
50% Median	796.25	50% Median	490.00
25% Q1	560.00	25% Q1	290.00
10%	320.00	10%	200.00
5%	200.00	5%	200.00
1%	200.00	1%	200.00
0% Min	200.00	0% Min	200.00
n = 917306		n = 795848	

SocDis=N		SocDis=Y	
Quantile	APIindR	Quantile	APIindR
100% Max	1000.00	100% Max	1000.00
99%	1000.00	99%	1000.00
95%	1000.00	95%	936.25
90%	1000.00	90%	872.50
75% Q3	931.25	75% Q3	706.25
50% Median	786.25	50% Median	485.00
25% Q1	546.25	25% Q1	264.29
10%	320.00	10%	200.00
5%	200.00	5%	200.00
1%	200.00	1%	200.00
0% Min	200.00	0% Min	200.00
n = 956745		n = 857367	

END LOTS MORE

Archive of Calculations

Following distribution of this document, a collection of files used in these calculations will be made available. A .zip achive will include a set of files in SAS System Viewer version 8 format (.sas7bdat) along with a readme file for documentation. The Zip Archive will be available as file apinotesarchive.zip at URL

http://www-stat.stanford.edu/~rag/api/apinotesarchive.zip